THE OIL WEEKLY

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The Oil Man's Calendar

MAR. 21–22	American Petroleum Institute, Division of Production, Mid-Continent District, Spring Meeting, Amarillo, Texas.
APR. 1– 3	Society of Exploration Geophysicists, Houston.
2– 4	American Association of Petroleum Geologists, Twenty-sixth Annual Meeting, Houston.
3– 4	Society of Economic Paleontologists and Mineralogists, Houston.
7–11	American Chemical Society, St. Louis.
15–17	Southwest Gas Measurement Short Course, University of Oklahoma, Norman.
16–18	Western Petroleum Refiners Association, Hot Springs, Ark.
17–18	American Petroleum Institute, Division of Production, Eastern District, Pittsburgh.
23–25	Petroleum Industry Electrical Association, Tulsa.
23–25	Natural Gasoline Association of America, Dallas.
24–25	National Petroleum Association, Semi-Annual Meeting, Cleveland.
MAY 2– 3	Petroleum and Natural Gas Conference, State College, Pa.
19–22	American Petroleum Institute, Mid-Year Meeting, Tulsa.
NOV. 2– 7	American Petroleum Institute, Annual Meeting, San Francisco.

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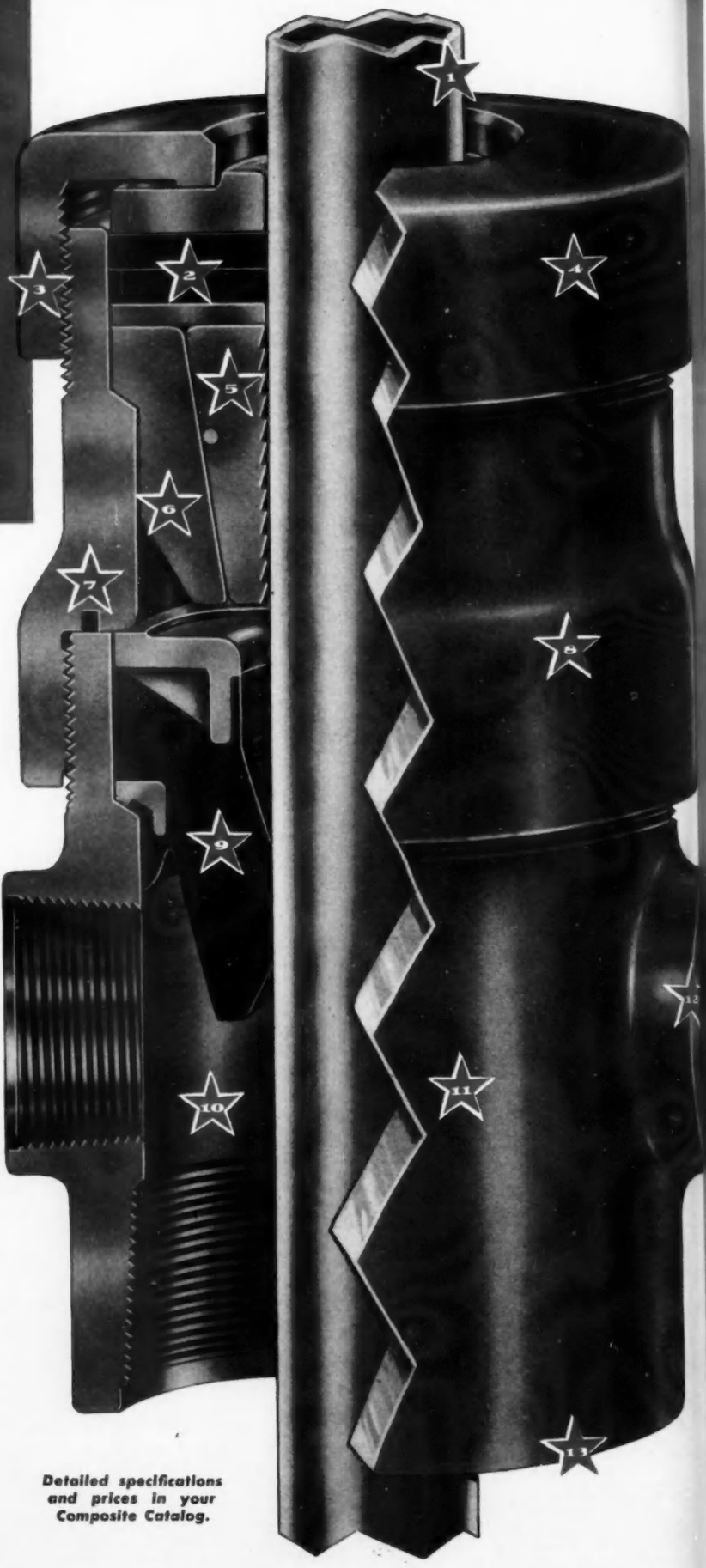
Best Buy



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THE OIL WEEKLY

MARCH 17, 1941

VOLUME 101 NUMBER 2

The Changing Panorama

ABNORMALLY low gasoline prices in 1940 (lowest since 1933) despite a 6½ percent increase in domestic demand, are attributed to excessive gasoline stocks, according to an article in a recent issue of Shell News, published by Shell Oil Company.

However, recently we have heard some other reasons ascribed to present gasoline prices which continue low. Distress gasoline, we were told, is not the only reason—nor can it be called the principal reason—for low prices. Our inquiry as to what the principal reason actually is brought this response:

"There is a sizable difference in refining costs between companies—between major companies. Some companies have the benefit of processes which will produce gasoline at costs substantially lower than that of other large refining companies. Those who have the low-cost processes are responsible for the present low prices of gasoline."

Experience Speaks . . .

Late last week when we received a wire from our Washington office that a gentleman of whom we had never heard, had prepared a 52-page report for the Temporary National Economic Committee, in which was a suggestion that the oil industry be made some sort of public utility, we made a check to find out something about the past experience and history of the Roy C. Cook who had prepared the report.

The news dispatches had said that he was in the Anti-Trust Division of the Department of Justice. T.O.W.'s D.I. (THE OIL WEEKLY's Department of Intelligence) returned the following report:

"Roy C. Cook was born in North Carolina in 1909, following year moved to and was reared in Pickens County, South Carolina. Took A.B. degree in economics at University of South Carroline, 1930; post-graduate work there and at George Washington University. Entered government service 1933 as assistant to Barron Van Heeckeren, Presiding Commissioner of General Claims Commission of United States and Panama; with N.R.A. in 1933 for research on food codes; made field study of leather industry for Bureau of Labor Statistics same year; went to National Bituminous Coal Commission and in August, 1938, joined Department of Justice to do economic research and analysis, working on oil 90 percent of time."

There is his history and experience. Between the lines one reads: "Has all the college degrees which pass for experience under the New Deal; feeding at the public trough ever since he stopped going to state or privately endowed schools; entered government service at the ripe and advanced age of 23 as assistant, no less, to Barron Van Heeckeren, Presiding Commissioner of General Claims Commission of United States and Panama (to settle international claims, we presume); changed jobs plenty of times but never separated from the public payroll; and finally with all of these years of practical experience behind him, with the matured judgment of 31 or 32 years, he proposes making a public utility out of the oil business!"

Mr. Cook probably is a most amiable gentleman. He may be slightly bald through the press of mental labor under which he works, or he may have that luxuriant hirsute growth which so frequently is associated with imported or native-born radicals. We do not know. We have never met him—in fact, never heard of him until he made the headlines last week . . . but there is one thing we are willing to risk an opinion on: any man whose employment and training is so typically that of the group with which we have come to associate half-baked ideas, has surely failed to take into account the many basic differences between the oil business and that of the average public utility.

Kansas Heard From . . .

The March 3 Panorama reported the criticism of an un-named president of a large oil company who expressed disbelief of figures presented in an article in a previous issue of THE OIL WEEKLY, dealing with the possible increase in production which the United States could develop, without prejudice to ultimate recovery, if an emergency arose. The executive expressed the opinion that Kansas production could not be increased by the 50,000 barrels per day allocated to the state in THE OIL WEEKLY's estimate.

Now comes from the upper Mid-Continent some interesting comment. A number of engineers contacted say that they think that Kansas could easily increase its production by 50,000 barrels per day. One man says Kansas could increase its production immediately to 350,000 barrels a day—that such production could be sustained for 30 days and that it would then probably settle back to 250,000 per day—which is the figure THE OIL WEEKLY gave.

Many engineers question Kansas potentials, which is to be expected. (Kansas potentials at last writing totalled 7,000,000 barrels per day.) Last week's production was running about 196,000 barrels a day. of this, 45,000 barrels was coming from non-prorated wells. The balance came from 6700 prorated wells. It would require only 7 barrels per day increase from the prorated wells to bring the Kansas production up to 250,000 barrels per day. Present average on prorated wells is 22.7 barrels per day. In 1937 average daily allowable was 40 barrels per well. Capacity for pipe lines in Kansas is reported to be from 235,000 to 265,000 barrels per day. Thus it would seem that pipe-line capacity, rather than well capacity, might be the determining factor unless new lines were built.

EDITORIAL

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THE OIL WEEKLY

MARCH 17, 1941

Vol. 101 No. 2

Consider the Drilling Contractor

AN INTERESTING, but pathetic thing, is happening in the drilling contracting industry. Drilling contractors are slowly drilling themselves out of business.

The reasons are not hard to determine but the cure is a difficult one. The basic reason for the present plight of a great many drilling contractors is that they are contracting hole at less than it costs to drill it.

They are encouraged in this frequently by a number of factors. Here are some of the reasons as given by drilling contractors themselves:

Many contractors fail to keep proper cost records and consequently do not realize it when they take a contract at less than cost. "Cost," to some of them means "out of pocket cost" and they will be able to appreciate fully what has happened to them only after they have used up their equipment and cannot get credit to buy new rigs, etc. If there ever was an industry that needed to make a study of cost accounting it is the drilling contracting industry.

The tendency to cut the price, so one contractor said to us recently, is encouraged by some oil companies who do not realize how close to the end of the rope a contractor may be. Here is the picture our contractor friend drew:

"Mr. Doe with 'A' Company will have luncheon with Mr. Roe of 'B' Company and in the course of the luncheon, the question of drilling costs will come up. Mr. Doe will say that his company is drilling and completing wells for about $10,000 each, whereas Mr. Roe has just gotten into the cost of his wells and is conscious of the fact that his wells have been costing about $12,000 each. Of course Mr. Doe wants to make it appear to Mr. Roe that his company is operating with the greatest efficiency and he does not give the true cost. He does not deliberately misrepresent this, but he makes an offhand remark and says 'about' such a figure. Mr. Roe then goes back to his company and since he cannot cut the price of pipe, cement or supplies, he insists that the price of the drilling contract be cut so as to bring his costs down to a figure comparable with 'A' Company."

"Some times, too, the production department of a large integrated oil company, being primarily interested in the cost of producing a barrel of oil, and unwilling to go into the detailed bookkeeping which is necessary to determine all costs, will underestimate their drilling costs, and ask a contractor to take a bid on what they may think is a fair price."

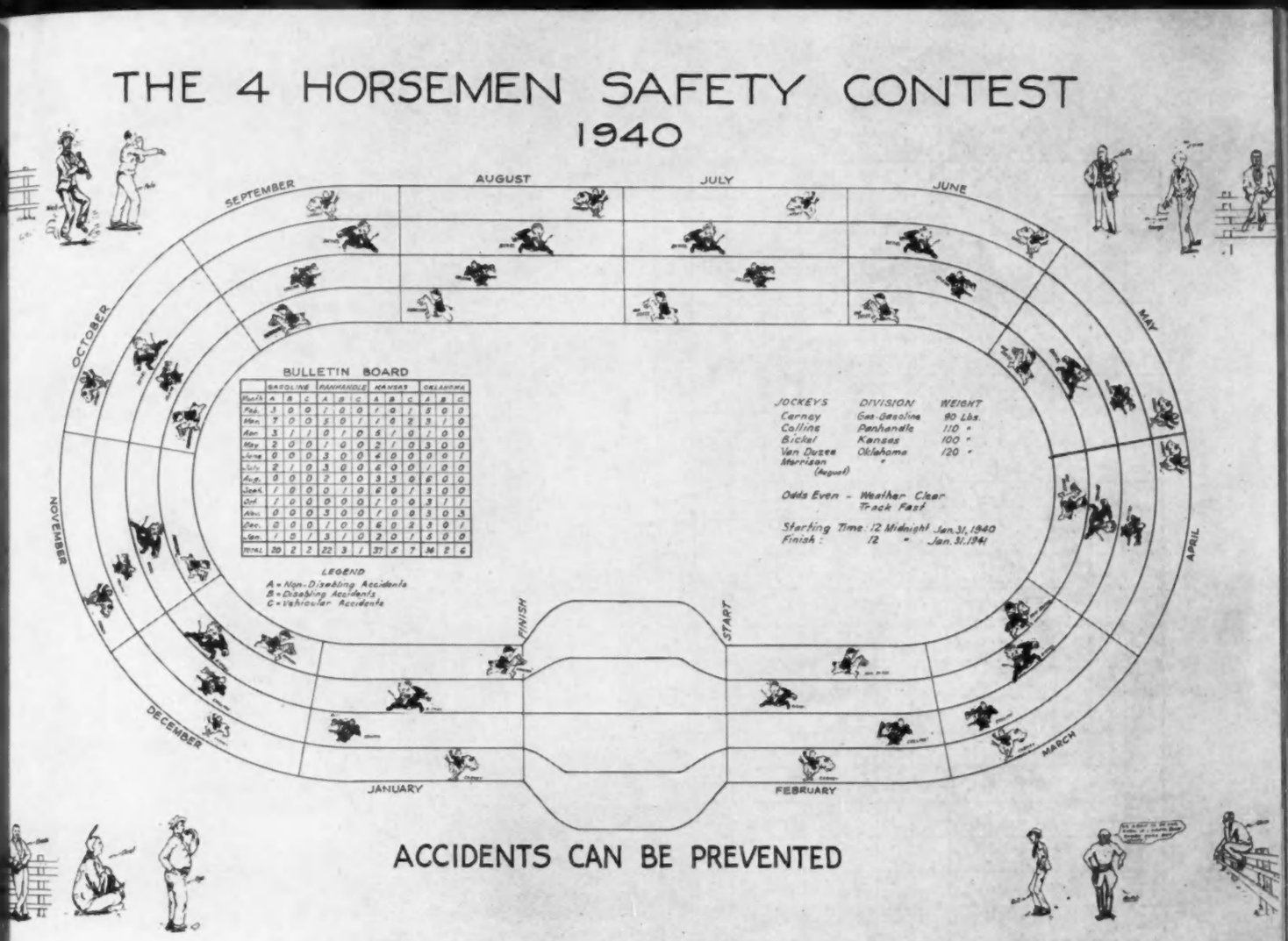
Says a contractor, in support of the above statement:

"We have operated jointly with several large companies where they were in charge of operations and we have found that their drilling costs were as high or higher than ours. This leads us to believe that in many instances an oil company executive, in discussing the costs of wells, is inclined to pick out a well with a remarkably low cost because it happens to stick in his mind, and use it as an average, whereas the average cost would be much higher."

The drilling contracting industry has a great deal to say for itself in the general economy of the oil industry. In the long run the drilling contracting industry should be able to save oil companies money on their drilling operations. We think it has. Certainly contractors have something very substantial to offer oil companies in relieving them of a difficult labor problem. Drilling contractors are worthy of their hire.

Yet, unless drilling contractors make a closer study of their costs, and unless oil companies with whom they do business are willing to pay them a fair profit for their work, it will not be many years until the contractor who stays in business will be the exception and not the rule. Because even the well-managed contracting firm cannot stay in business long if its competitors are ignorant of costs and indifferent to profits.

A recent survey made by THE OIL WEEKLY indicates that more than 90 percent of the oil-well drilling contractors in the United States own production of their own, and we do not believe that it is an exaggeration to say that if it were not for the fact that some of them can make up their contracting losses through their own production, there would be fewer drilling contractors right now.



Novel Safety Contest Gets Results

By BEN ALTMAN, Staff Writer

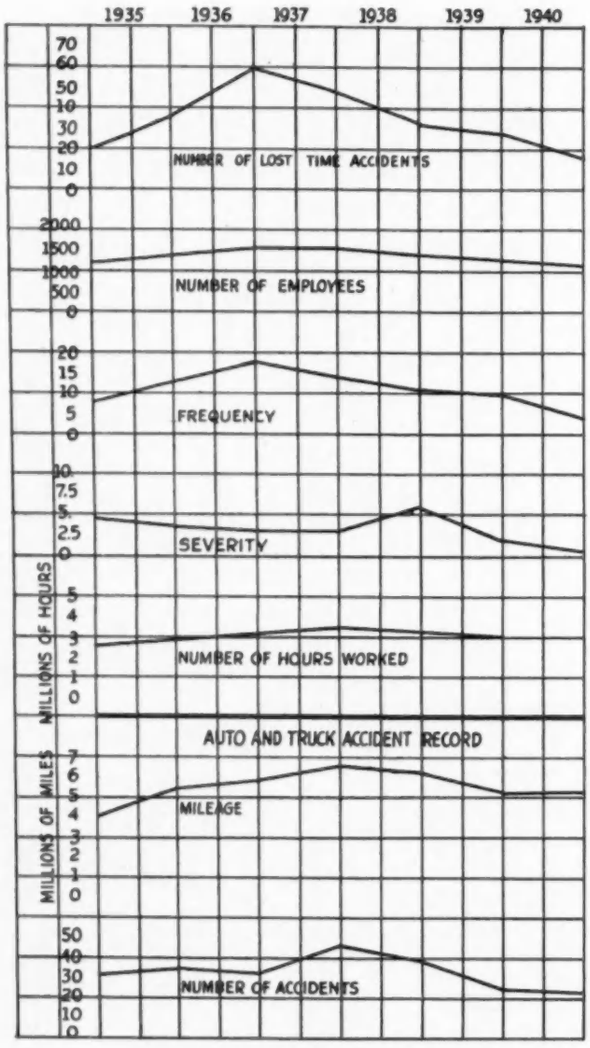
DUE largely to the interest created by a novel safety contest conducted between its four Mid-Continent division, Shell Oil Company during the past year had materially lowered accident rates than in the preceding four years.

During 1939 plans were formulated for a contest between the four divisions, and on February 1, 1940, the "Four Horsemen Safety Contest of 1940" went into action. At the end of the year it was found that the number of lost-time accidents had dropped to a five-year low, as had accident frequency rates and severity of injuries.

The four divisions that took part in the contest were: Gas-Gasoline; North Texas-Panhandle; Kansas; and Oklahoma. The contest was based on the principle of a horse race. The four division managers acted as jockeys on selected steeds, with each worker sharing a part in the contest. Respective positions during the 12-month race were charted at the end of each month by animated cartoons placed upon an oval race track, which had been divided into 12 segments. These race forms were distributed monthly to each drilling rig, district office, warehouse, gasoline plant, etc., so as to reach every employe. The plat was in such form that it could be tacked inside the dog house of a drilling rig, or on the walls of the district office or warehouse, and thus served the purpose of constantly spurring each roustabout, tool pusher, driller, engineer, pumper, etc., to be safety minded.

To further increase the employee interest in the contest, in addition to having each jockey named after the division manager, the horses were so named to include a part of every superintendent's name.

Superintendents, engineers and



Graph of results for five years

others were cartooned surrounding the race track in typical monthly moods, and with "nick" names and personal comment.

The method used in selecting the name for the horses is interesting. Alphabetic letters were taken from the names of superintendents in the respective divisions and combined to derive a name. For instance, in the Oklahoma division, winner of the contest, E. N. Van Duzee was the jockey on the horse Sooner McSoro, until replaced in August by W. H. Morrison. The name McSoro represents Mc for McNally of Lucien; S for Simmons of Wirt; O for Oakley of Avant; R for Ruark of Tonkawa; and O for Olson of Stroud. By this method the human element was further tied into the contest through its superintendents.

Other entrants in the contest were: C. R. Bickely, division manager in Kansas, mounted on Jayhawk Jenny; W. H. Collins, division manager of the North Texas-Panhandle area, riding Lone Star; and B. R. Carney, division manager of the Gas-Gasoline department, riding Sagaseous.

Each accident that occurred was recorded against that division in which it happened. A posted bulletin board divided the injuries into (A) Non-Disabling Accidents; (B) Disabling Accidents; and (C) Vehicular Accidents, which included both passenger and truck vehicles. The position of each entrant was determined by the number of accidents charged to his respective division. The formulae, given below, showed the monthly position of each entrant in the contest.

Winners get a belt buckle

For basis of computing a rating to determine the winner the following method was adopted. A vehicular accident was taken as a base of 1. A non-disabling accident was found over a period of years to cost one eighth as much as a vehicular and therefore represented a factor of 0.125. A disabling accident was similarly determined to cost two and one half times as much as a vehicular accident and represented 2.5. Thus, the formula was devised to compute the rating for each contestant:

$$\frac{\text{Non-Disabling Accident} \times 100{,}000}{\text{Number of Hours Worked}} \times 0.125 = \text{Rating}$$

$$\frac{\text{Disabling Accident} \times 100{,}000}{\text{Number of Hours Worked}} \times 2.5 = \text{Rating}$$

$$\frac{\text{Vehicular Accident} \times 100{,}000}{\text{Number of Hours Worked}} \times 1.0 = \text{Rating}$$

or substituting to obtain Oklahoma's rating; for three types of accidents;

$$\frac{(36)\ (100{,}000)}{778{,}170} \times .125 = 0.59$$

$$\frac{(2)\ (100{,}000)}{778{,}170} \times 2.5 = 0.62$$

$$\frac{(6)\ (100{,}000)}{778{,}170} \times 1 = 0.77$$

Total Oklahoma rate 1.98

Results graphically portrayed over a 5-year period confirm the benefits derived from this novel safety program. The total number of lost-time accidents are shown to have dropped to a new low record. The frequency rate, the number of disabling accidents per million hours worked, decreased considerably. Severity, the number of days lost per 1000 hours worked, also dropped considerably.

Identical formula was used in determining truck rating. Shell Oil Company's passenger-car rating during 1940 was 0.48 and truck-accident rating was 0.52 which is a combined rating of 0.49. This represented a slight increase in comparison with the rate for the year 1939; but national statistics show that auto accidents increased in 1940.

The Oklahoma division employees, winner of the contest, will be presented with a bronze belt buckle suitably inscribed.

Behind this successful safety program was R. J. (Bob) Lauder, safety engineer for the company.

Methods Developed for Inspecting

Tubular Goods and Sucker Rods

Should Aid Field Operations

By H. M. HENDERSON
Standard Oil Company
of California

THIS paper describes the general construction, methods of operation and some of the results obtained through the use of recently developed equipment for the inspection of tubing, drill pipe and sucker rods that have been in service for a period of time. Such inspection reveals when the equipment should be discarded before actual failures occur, thus affording a means of reducing operating costs.

The paper was presented before the spring meeting of the Pacific Coast District of the American Petroleum Institute Division of Production, held at Los Angeles on March 11, 1941, under the title of "Recently Developed Methods for the Inspection of Tubular Goods and Sucker Rods." It is presented here in somewhat abstracted and revised form from the original manuscript.

THE constantly decreasing profits obtained from the production of oil has encouraged the development and use of new equipment to help maintain profitable revenue return rates by further reducing the cost of operation. Included in this group are instruments for the inspection of tubing, drill pipe and sucker rods that have been in service for a period of time, and which provide a means of determining when such equipment should be discarded before actual and sometimes costly failures occur.

Material costs constitute one of the main items of production expense and it was mainly in regard to reduction of material costs that the equipment described in this paper was developed. Reduction in quantity of material required by the industry is doubly important at this time for in addition to reduction of production expense, it also releases material and manufacturing facilities to our constantly expanding defense program.

While wells are being produced by natural flow or by gas lift, the maintenance of the tubing string offers little or no problem as little if any wear occurs inside the tubing except in rare cases where a large volume of sand is produced with the oil, or where corrosion is a factor. However, when it becomes necessary to pump the well and sucker rods are installed, friction between the inside wall of the tubing and the sucker rod couplings results in a wearing away of the surface of both, the extent depending mainly on the straightness of the hole and to a lesser degree on the character of the fluid produced, pumping speed, etc.

Worn sucker rod couplings are detected readily when the string is pulled and are replaced as the situation requires. Worn joints of tubing also are replaced at times before actual failure occurs, but the detection of worn points is not so easy and a knowledge of the extent of the wear is not so apparent to the well crew as in the case of the sucker rods for it is impossible to determine the amount of the wear and in many cases to even detect the existence of it without special instruments.

It was to improve this situation that an instrument to survey tubing either on the rack or in the well was developed.

Figure 1 shows a diagrammatic arrangement of the instrument in a section of tubing and the manner in which it operates to detect the worn spots and the extent of the reduction of wall thickness. The instrument is set, before running into the tubing, to indicate when the remaining wall thickness is less than a given amount. For example, if it is set to indicate a remaining wall thickness of less than ⅛-inch, no electrical contact is made unless the remaining wall at any point throughout the length measured is less than this amount. The actual wall thickness may be any amount between ⅛-inch and the full thickness of new pipe if no electrical contact is made. In other words, the instrument only indicates if the remaining wall is less than the amount for which the instrument is set.

By resetting the instrument to indicate other remaining wall thicknesses, tubing may be segregated into different classes and utilized to the most economical advantage.

As is readily apparent, the instrument does not measure the actual wall thickness of the pipe, but indicates the inside diameter opposite each one of the fingers. The remaining wall thickness is determined by comparison of this diameter with the nominal O.D. of the pipe. Commonly used settings of the instrument are for 1/16-, 3/32- and 1/8-inch remaining wall in order that tubing may be classified sufficiently for proper segregation.

The instruments used to survey tubing on the rack and tubing in the well are alike in principle and similar in construction, the main difference being in the recording of the measurements. When surveying tubing on the rack, an "electrical buzzer" indicates the existence of a worn area, while a strip recorder with pen records the length and depth of worn area in the tubing when a survey is conducted in a well. To determine the length of the worn area in tubing surveyed on the rack, the operator notes the distance the instrument is moved while the buzzer is buzzing.

In order that the entire circumference of the tubing be surveyed without the necessity of rotating the instrument, contact fingers are

spaced at 3/8-inch intervals around the circumference of the tool and these will detect a worn spot as small as 3/8-inch in width.

Measurements of tubing in the hole are always made when coming out of the hole as greater accuracy is thereby obtained.

Figure 2 shows a strip chart made from a survey of a string of tubing in the well. This illustrates the segregation of joints with different minimum remaining wall and the location of the worn spot in each joint. The horizontal lines on the chart indicate the location of the couplings. Any swing of the pen drawing each chart indicates a point where the remaining wall thickness is less than the tool is set for when that particular run is being made. It is noted that the space between joints at each coupling is shown on all charts.

In a survey conducted at a well which had caused much trouble from tubing leaks and where conclusions had been reached to replace the string with a new one, it was found that 106 out of 152 joints had a remaining wall of more than 1/8 inch and could be rerun safely while the joints with less remaining wall were replaced with new material. Considerable saving was thus accomplished and a definite knowledge of the existing situation was obtained.

A survey conducted on a rack full of tubing which had been segregated by visual inspection indicated that much good pipe had been segregated as scrap and considerable scrap pipe had been classed as good, indicating that purely visual inspection of worn tubing probably would lead to much expense and trouble due to the improper classification and use.

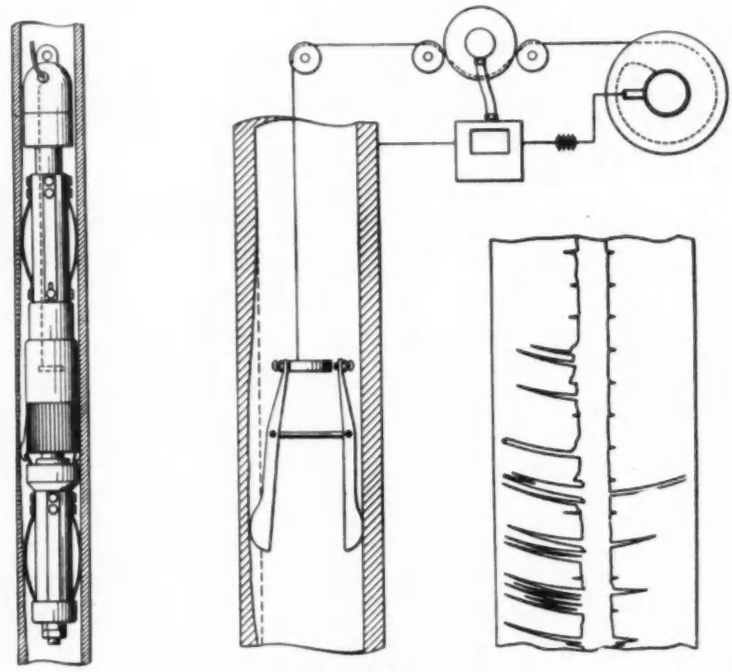


FIGURE 1
Diagrammatic arrangement of instrument in a section of tubing, and manner in which it operates.

Sucker rods constitute one of the major items in the maintenance of a pumping well. Sucker rods are subjected to severe service and until recently there has been no means of determining where a probable failure was liable to occur, hence there was no opportunity of removing the defective rod before failure actually occurred.

It generally is conceded that sucker rod failures usually are due to "fatigue" of the steel. This fatigue may be caused by concentration of stress at a nick in the rod produced by rough handling, a corrosion pit, a kink in the rod produced in service, or by faulty handling, or by continued excessive overloading of the rod string.

It has never been found possible to correlate the progress of "fatiguing" in any material with the commonly known properties of the material such as tensile strength, charpy impact value, Brinnell hardness, etc., hence it has been impossible to know to what extent the fatiguing has progressed or how to predict the time or place of failure.

Such being the case, the only criterion available for use in the retiring of a string of sucker rods from service or relocating at a well where lighter service was required was "when the number and frequency of failures appeared to be too high to economically continue the string in service at the particular location."

In removing a string of rods from a well, no method has been available to segregate the rods suitable for further service from those which should be scrapped.

Recently, equipment has been developed for the surveying of a string of rods as the rods are being pulled from the well and from the records drawn on the strip chart by the recording instrument, to

Correction on High-Speed Rotation Article

It has been called to our attention that the article, "Rapid Penetration with High Rotary Table Speeds," published in *The Oil Weekly*, February 10, 1941, might easily be misleading.

In the first place, the article appears to be a general discussion of high-speed rotation practices, whereas it actually described only the operations and experiences of one company in one California field. This limitation was not stated clearly.

Consequently, general statements in the article, to the effect that practically all rigs used for drilling at high table speeds are equipped with underfloor drives to the rotary and that table-drive engines are invariably horizontal twins, are erroneous.

The facts are that individual rotary-table drives were first introduced in 1935 with a derrick-floor-mounted vertical twin-cylinder steam engine, direct connected through a gear box to the rotary, and this type of unit has proven very popular and is used widely where speeds are very high.

The article is not a generalization but simply describes the operation of one company in the Rio Bravo field of California. Other companies use different practices and equipment, although all stress the desirability of careful synchronization, maintenance and inspection of machinery items.

classify the rods according to the amount of working that the steel has undergone.

The operation of the instrument depends upon the magnetic properties of the material in the sucker rod. Sucker rods are drawn through an assembly at the surface as they are raised from the well. This assembly contains a group of primary coils which surround the rod and are energized by an electric current drawn from an A.C. motor-generator set mounted on the truck which also carries the recording instruments. A set of "pick-up" coils which surround the rod also is carried in the well head assembly. A voltage is generated in the "pick-up" coils by the magnetic field which is induced in the sucker rod by the energized primary coils and it is the variation in this voltage which is indicated by the recording instrument located in a truck.

A novel electric arrangement causes the strip chart in the recorder to travel in exact synchronism with the rods, one division on the chart corresponding to one foot of sucker rod, thus the exact location of any condition recorded may be inspected after the rod is laid down.

Since there is no means of checking indications by physical tests of the material in the laboratory or otherwise, it remains for the operator to either continue to operate the string of rods until actual failures occur and see for himself if predictions have been correct, or, if he has had excessive shutdowns due to failure of the rods, to replace or relocate the rods showing poor condition to determine if the rate of failures decreases.

Figure 3 shows the records of rod failures in a group of wells "before" and "after" removal of rods found to be in poor condition when a magnetic test inspection was made. Operating conditions were constant under both periods of the test.

Figure 4 illustrates various new rod characteristics and typical used rod characteristics after fatigue has progressed and failure later occurred, as drawn by the magnet recorder.

As shown by these charts, each type and make of rod produces its own characteristic graph, depending upon manufacturing process and analysis of steel used. It is thus evident that proper identity of the rod must be available in order that the chart may be interpreted properly. The lower line on the chart, commonly called the "phase" graph may be considered as a reference line for the upper graph which indicates the condition of the rod. As fatigue progresses in the rod, the upper graph on the chart rises. Experience in surveying the different types and makes of rods permits the engineer to estimate the extent to which fatigue has progressed and to recommend future use or disposal of the rod.

A great many interesting circumstances have been brought to light by magnet surveys and while many problems remain unanswered at this time, it is probable that longer experience will reduce this number a considerable degree.

It is to be generally conceded

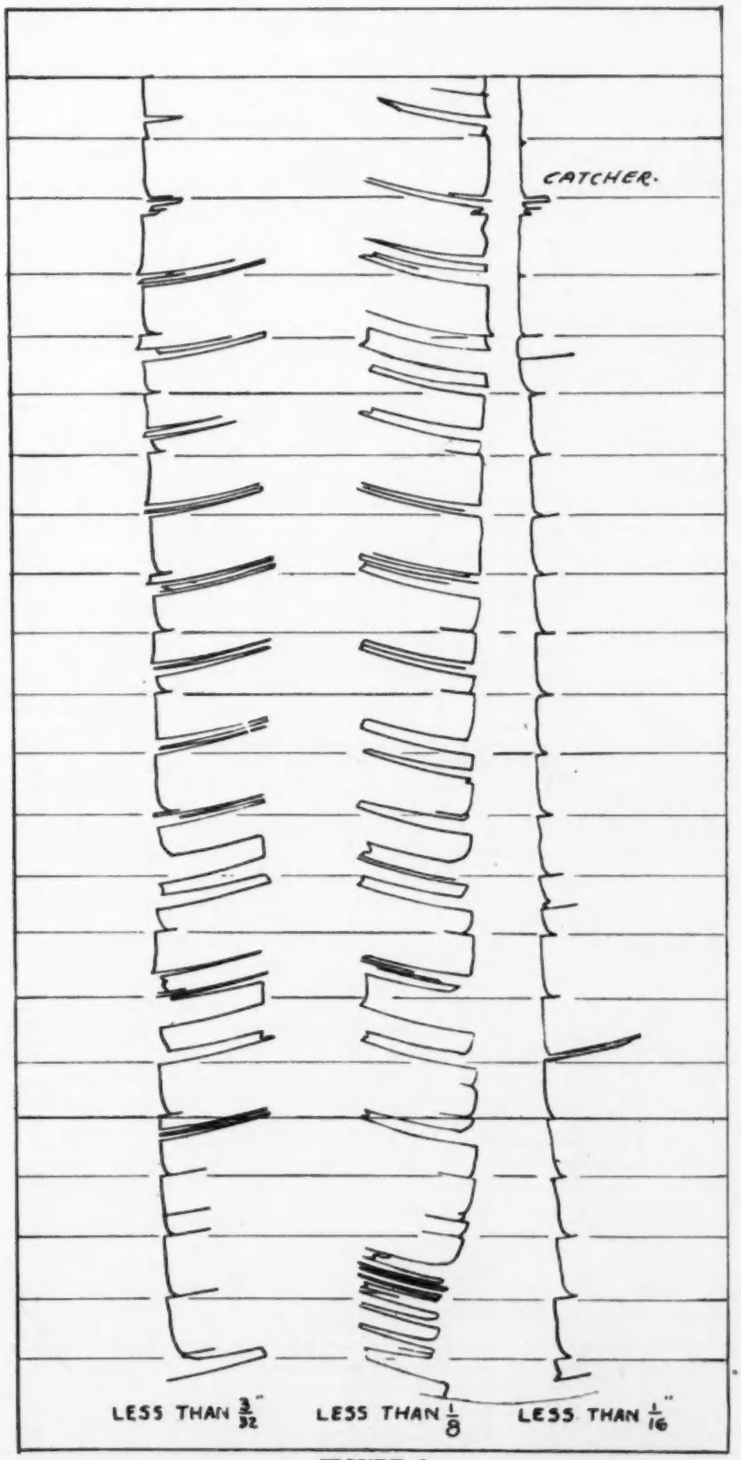


FIGURE 2
Strip chart made from survey of tubing string in a well

FIGURE 3

Record of Rod Failures in a Group of Wells "Before" and "After" Removal of Sections Found to Be in Poor Condition

Well	Depth	Rods, Inches	S P M	Stroke, Length	Plunger Size, Inches	Rods Removed After Survey	Failures 1 Year Before Survey	Period Operated Since Survey, Months	Failures Since Survey
A.....	7170	37—1 54— ⅞ 147— ¾	18	108	1¼	54	60	2½	1
B.....	3590	111— ¾	12	44	1½	12	1	2½	0
C.....	6569	93— ⅞ 124— ¾	Was 16 Now 23	60	1½	12	118	5	0
D.....	4547	43— ⅞ 108— ¾	24	54	1½	38	40	2	1
E.....	4500	79— ⅞ 70— ¾	24	54	1¾	11	25	2	0
F.....	4175	59— ⅞ 77— ¾	24	40	2	75	84	3	0
G.....	6139	92— ⅞ 111— ¾	20	48	1½	46 93	20	3	0
H.....	4000	37— ⅞ 95— ¾	22	66	2¼	21	16	3	0

that an instrument which would satisfactorily segregate the poor rods from a string would be of great value to the industry including suppliers as well as users.

In the drilling of an oil well by the rotary method, one of the items of equipment which can cause a great deal of expense and delay in the completion of the well is the drill pipe. Drill pipe is expensive in first cost but drill-pipe failures sometimes cause additional expense which may be even greater than the original cost of the entire string of drill pipe.

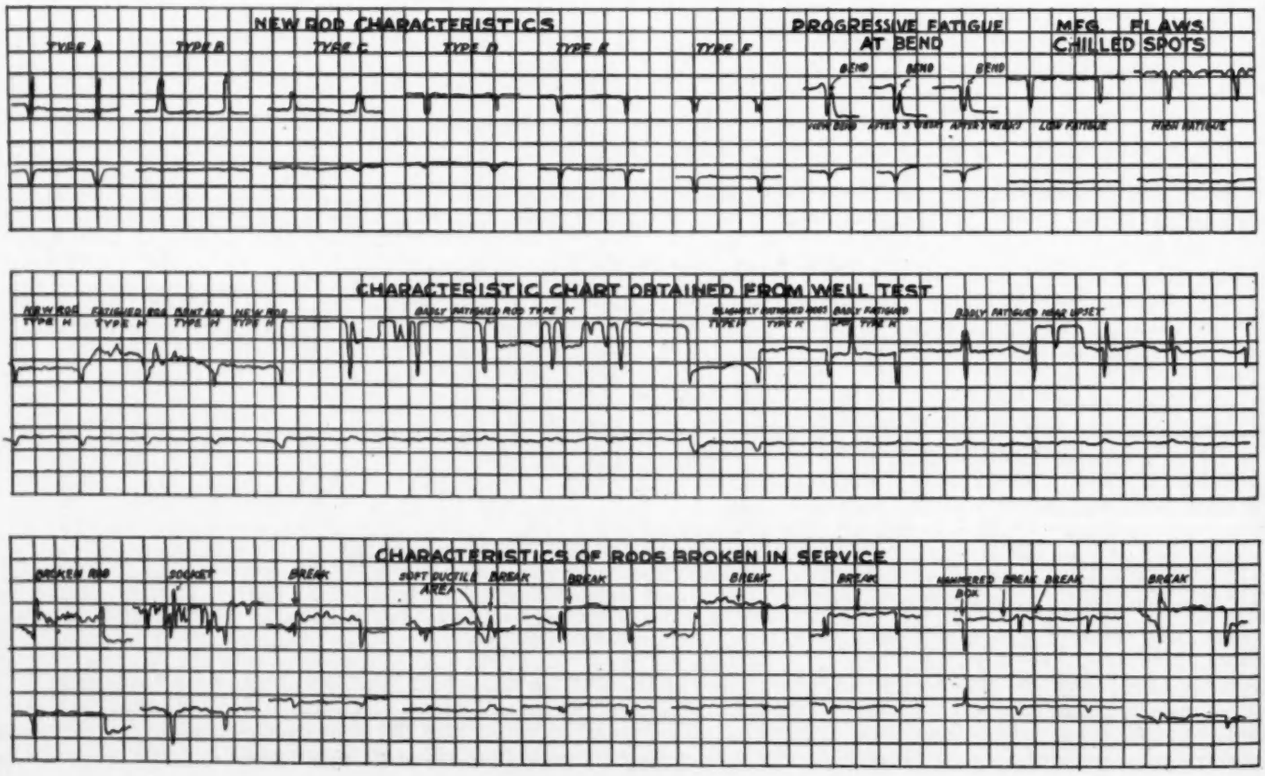
Defects in drill pipe which may weaken the strength of the pipe are seldom apparent or visible to the eye because they generally occur inside the pipe or at the junction of two joints and inside the coupling. At times a crack will progress until the circulating mud cuts entirely through the pipe wall and the drilling crew are able to detect and remove the joint from the string before failure actually occurs. However, in the majority of cases, the first intimation that a failure is going to occur comes after the failure has happened.

In the past, the decision as to when a string of pipe should be retired from drilling service was reached when a number of failures had occurred in the string and when it was felt that the string had been used sufficiently to have served its normal life.

Having had no means of segregating the good joints remaining in the string from the ones which were liable to cause early failure, the entire string usually was retired at the same time. It is evident that this is not economical practice but until some practical method was developed to segregate the good pipe from the defective, there was no safe alternative. This was the situation which prompted the development of an instrument for the careful and minute inspection of the inside surface of a length of drill pipe. With this instrument, it is possible to inspect the internal surface of a 50-foot length (by inspecting 25

FIGURE 4

New Rod Characteristics and Typical Used Rod Characteristics After Fatigue Has Progressed and Failure Later Occurred, as Drawn By Magnet Test Recorder.



feet from each end) thus making it possible to inspect drill pipe in doubles.

Figure 5 is a sectional drawing of the instrument used for drill pipe inspection, showing the general arrangement of the tube, lenses, light, etc.

In effect, the device is a "telescope" with a double convex wide angle objective lense at the end adjacent to the object to be viewed, and a series of condensing lenses every 2 feet in the space between the objective lense and the focusing eye-piece with occular lenses. It is constructed of five 5-foot sections which may be used either singly or any multiple of the 5 lengths up to the full 25 feet in length. A 1000-watt mercury vapor lamp is attached to the end of the tuboscope just beyond the objective lense in such manner that it lights the surrounding drill pipe wall and enables the operator to make a close inspection of the entire circumference of the pipe for a length of approximately 9 inches without moving the instrument. In operation, the inspector keeps his eye against the eye-piece and walks slowly toward the end of the pipe, pushing the instrument ahead of him into the pipe and inspecting the entire inner surface as the instrument progresses into the pipe. A set of spring centralizers keeps the instrument in the center of the pipe and a framework similar to an overhead tramway supports the instrument when too great a length overhangs the end of the pipe. Sometimes an assistant takes the place of the tramway. To enable the operator to look at right angles to the pipe axis down into a pit or defect in the pipe wall, a mirror is centered on the axis of the pipe just beyond the objective lense and tilted at an angle of 45°. This acts as a "periscope" and gives the operator a close view directly at the spot. A small depth gauge which is so arranged that it will drop readily into and be drawn from a pit in the wall, permits the operator to actually measure the depth of the pit or other defect.

Photographs may be taken by attaching a special camera to the focusing eye-piece after the instrument is focused on the spot to be photographed. Timing of the shutter depends upon length of device, capacity of lamp and I.D. of pipe. These photographs furnish a permanent record of the pipe condition and progress of any condition may be followed by taking a series

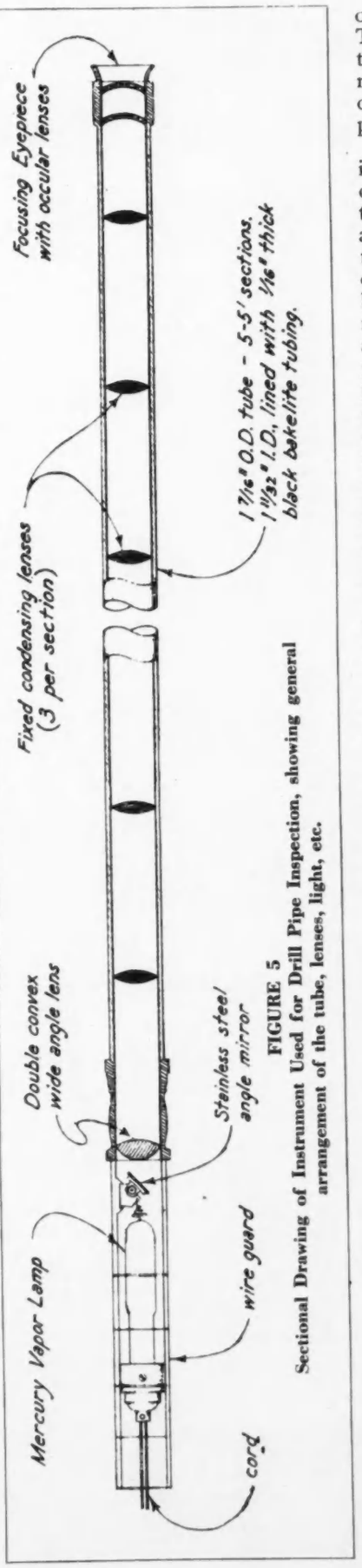

Focusing Eyepiece with occular lenses
Fixed condensing lenses (3 per section)
1 7/16" O.D. tube - 5-5' sections. 1 9/32" I.D., lined with 1/16" thick black bakelite tubing.
Double convex wide angle lens
Stainless steel angle mirror
Mercury Vapor Lamp
wire guard
cord

FIGURE 5
Sectional Drawing of Instrument Used for Drill Pipe Inspection, showing general arrangement of the tube, lenses, light, etc.

of photographs for comparison. This furnishes valuable experimental data for study where different methods are being tried to reduce or eliminate certain causes of drill-pipe failure.

In order that the drill pipe to be inspected is in condition so that all defects may be observed readily, the pipe is cleaned thoroughly by a wire brush which is pushed through the drill pipe on the end of a piece of ½-inch pipe. The brush is rotated by an electric motor-driven hand drill which is attached to the end of the ½-inch pipe and held by a helper who pushes the brush through the joint of drill pipe being cleaned. Air is forced through the ½-inch pipe by a small air compressor which is connected to the end of the ½-inch pipe by a hose and a swivel connection. This air is released just behind the rotating brush and aids in completely cleaning the drill pipe wall.

After removing the brush, air is again blown into the drill pipe to discharge any loosened material.

The commonest defects to be looked for when inspecting drill pipe are:

1. Corrosion pits.
2. Pits caused by the rolling of foreign material into the pipe wall during fabrication at the pipe mill.
3. Laps, seams, folds, etc., caused during fabrication.
4. Fatigue cracks, usually found in the bottom of pits.
5. The butting of joints in a collar.
6. Fluid washing or cutting, usually caused by some obstruction which created eddies in the fluid stream.

It is readily realized that much valuable information can be obtained regarding the condition of a string of drill pipe by careful inspection of the inside surface similar to the external inspection that is usually made.

Probable costly failures may be avoided by removing questionable joints from the string before failure. Also joints in good condition may be kept in service.

Conditions or circumstances which lead to or promote failure may be detected, and many of these probably will be eliminated by changes in manufacturing or operating practices. All of which will tend to promote economies in the drilling of oil wells which will in turn react to the advantage of the user as well as the producer of petroleum products.

Aspects in Fluorescence Analysis of Petroleum

By JACK De MENT

WITH the greater availability of more effective and inexpensive sources of ultraviolet radiation the chemist may now test petroleum, either crude or refined, with the means offered by fluorescence analysis. These sources may be of the black bulb type of lamp costing several dollars or they may be of the mercury-quartz type of lamp costing more. Of the two, the latter is preferable for laboratory tests while the former is applicable especially for field tests and checks.

Such tests are thought to provide data that can be placed to practical use by geologists and petroleum engineers.

Fluorescence of Petroleum Materials

According to various investigators the appearance of coals and especially oil shales is characteristic in ultraviolet light. Briggs states that coal has but little activity while coals containing an admixture of ankerite are often speckled with a highly intense golden yellow fluorescence where the ankerite appears.

The examination of bituminous stones by the method of impregnation as well as by the use of ultraviolet radiation to identify bitumen has been used for road construction purposes.

Bruckner and Meinhard, and others, have engaged in studies on coal tar, stearin, pitches, crude montan wax, and petroleum. They found that each of these gave a characteristic fluorescence adequte for identification purposes provided the specimens were pure and not mixed with impurities.

For actual laboratory work examination of specimens while in the solid form may give results, although in some cases more dependable results are given by specimens in the fused state or when dissolved in organic solvents. These solvents may be of a highly fluorescent nature or they may be non-fluorescent. In Table 1 non-fluorescent solvents are given along with those which are fluorescent.

TABLE 1
Fluorescent Solvents

benzaldehyde	tetralin
diphenyl ether	oleum turbinthae
acetic acid	dichlorohydrin
benzoic acid	impure benzene
benzyl benzoate	naphtha
benzyl acetate	paraldehyde
amyl acetate	pineol resorcinate
eugenol	terpin hydrate
butanol	isoamyl alcohol
chlorotoluene	nonyl alcohol
cyclohexane	acetophenone
glycerol	citronellol

Non-Fluorescent Solvents

most pure simple alcohols
some samples of pure water
some samples of pure ethers
paraffin oil
some samples of pure benzene

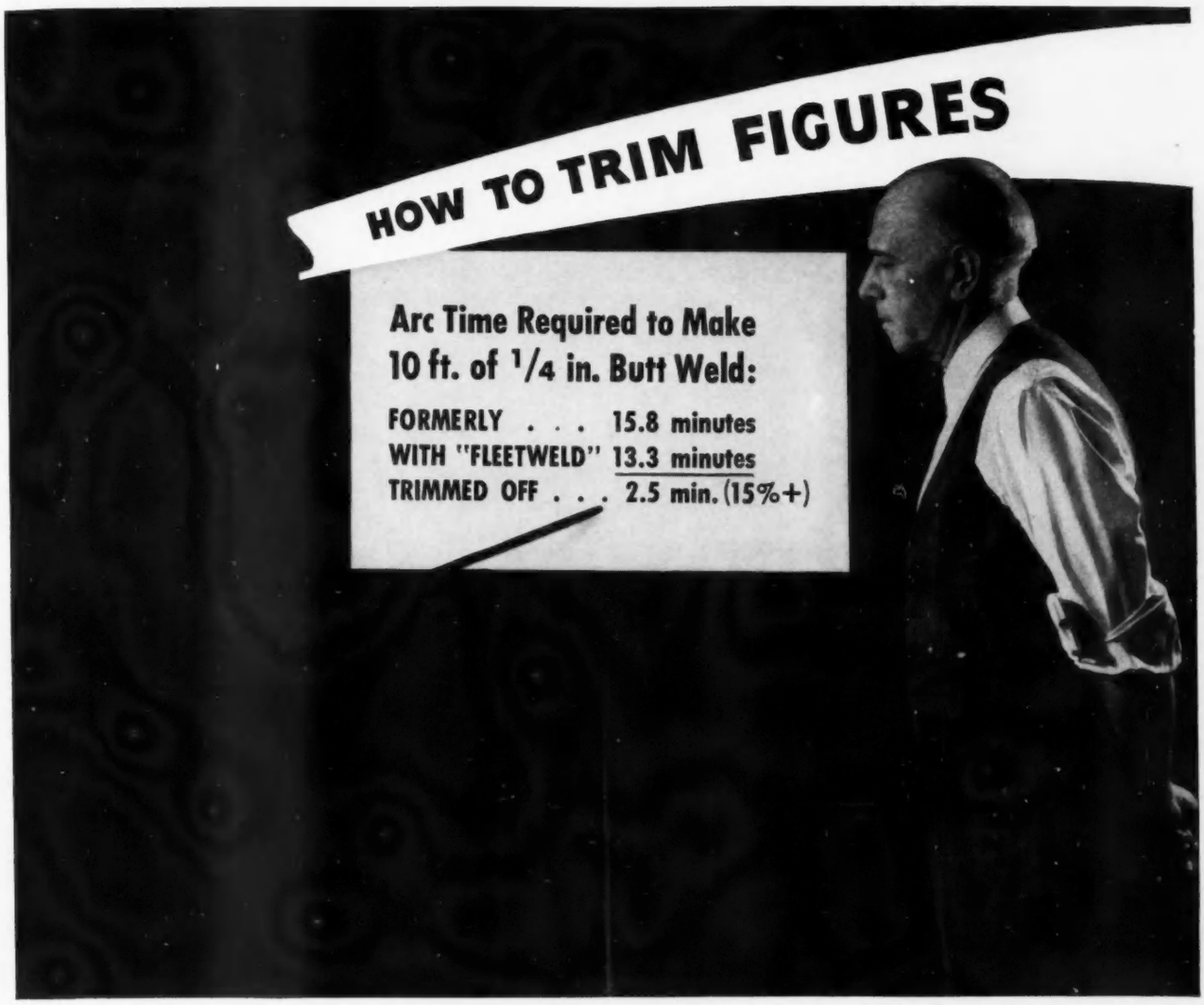
A very general technique has been suggested by the author using the solvents described for specimens of bituminous materials and noting the alteration which occurs on examination in ultraviolet light. The comparison of the quenching or excitation, as well as the modification in intensity, being taken as a criterion of results. When the procedure is followed in standard form successful results usually are obtained.

Radley and Grant have presented an interesting test as proposed by Milner for distinguishing between many of the types of bitumens, both natural and artificial, with a rapidity not possible by the usual chemical or physical procedure. They describe the technique as best carried out by placing 5 cc of a ½ percent carbon bisulfide solution of the bitumen in a quartz tube and comparing the fluorescence with that given by a bitumen of known origin. Milner states that Trinidad Lake asphalt, Cuban asphalt, Pyrimont Seyssel asphaltic limestone, Mexphalt R1 and Mexphalt E are employed in his laboratory as general standards with some success. All the residual asphalts examined by him were characterized by a greenish-yellow fluoresence. In blown asphalts this color was much brighter than the ordinarily seen green-brown hue. Asphaltic limestones fluoresced with a deeper yellow hue than the residual asphalts.

Correlating Oil Sands

Of significance, but unfortunately not very well known, is the use of fluorescence as an aid in correlating oil sands. In this the fluorescent properties of crude petroleum serve as a sure and fool-proof method for correlating oil sands in certain of the oil fields of California. It is believed that adoption of the technique will greatly augment, if not replace, the old fashioned methods of correlation now in use, such as the study of micro-fossils and mineral grains in the oil-bearing formations.

The method, first described by Melhase, is based upon the fact that all petroleum oils fluoresce intensely when subjected to ultraviolet radiation with a wave length of between 2000 and 3800 A.U. This range in wave length is large and results may be adequately obtained by use of the sources available or illustrated whose effective output is often in the vicinity of 3000 and 3400 A.U. Even the use of the


HOW TO TRIM FIGURES
Arc Time Required to Make
10 ft. of 1/4 in. Butt Weld:
FORMERLY . . . 15.8 minutes
WITH "FLEETWELD" 13.3 minutes
TRIMMED OFF . . . 2.5 min. (15%+)

ALTER EGO: Literally "one's other self"—the still, small voice that questions, inspires and corrects our conscious effort

ALTER EGO: I don't care how you argue . . . *the speed-up in production* you're looking FOR is in this electrode you're looking AT.

Then you mean it's all that the name implies: "FLEETWELD."

ALTER EGO: And how! With that rod we can step up ¼-inch butt welds from 38 feet to 45 feet per hour. And get high-strength, ductility and smoothness, too.

Say—that's 7 feet per hour faster.

ALTER EGO: And the *faster* you deposit *on* the work, the *more* you deposit *in* the bank!

• •

LINCOLN SUGGESTS: There are many ways to speed up weld production. Use "Fleetweld" for maximum deposit rates. Use large electrodes and positioned work. Use bending and forming to eliminate joints. Use fixtures to quicken setup and tacking. For ideas on "figure trimming," see "Factors In Low-Cost Manufacture of Welded Products" (gratis).

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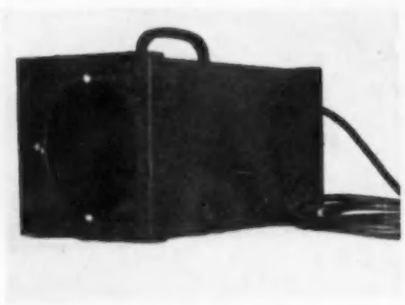

FIGURE 1

Portable ultraviolet unit suitable for petroleum testing. Uses a mercury projector flood lamp, lasting 1000 hours.

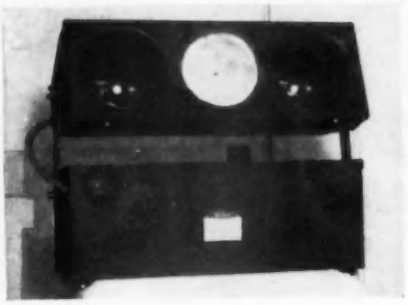

FIGURE 2

Ultraviolet projection unit for experimental use. Has two 100-watt lamps with filters, and 150-watt projector lamp.

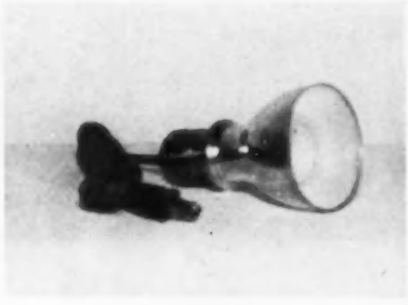

FIGURE 3

Argon lamp (2½-watt) source of ultraviolet light. Suitable for general use due to long life and low power consumption.

feeble radiation emitted by the argon cathode tube will excite fluorescence in specimens of petroleum. Melhase tested oil specimens from many California fields and from different sands occurring in these fields. His tests were conducted for a period of about three years. It was found that no two specimens exhibited the same quality and degree of fluorescence unless they were obtained from identical sands. In the majority of the cases the difference in fluorescence was found to be readily detectable by the eye, but for greater accuracy and refinement in classification it was necessary to determine the wave length of the fluorescence light emitted from the sample.

It follows, therefore, that when a well is drilled in any particular field and samples from each of the various sands are penetrated and subsequently tested and classified, the record obtained becomes an index for that field. Classification, of course, being performed by fluorescence analysis. When subsequent wells are drilled the new samples may be compared with the index and correlated accordingly. It is necessary, of course, that the samples to be tested consist of oil or of sands containing oil. Neither the specific gravity of the oil nor the percentage of mud and water in the sample has any effect upon its fluorescent properties and it matters not how the sample is secured, whether from the ditch, bailings, or extracted from the core if the formations are cored.

Melhase regarded the method as a possible means of identifying formations penetrated by the drilling bit. At any rate, he further stated, correlation of oil sands by means of fluorescence is simple, quick, and positive since it requires no expensive or elaborate equipment, and any one of normal eye-sight is capable of making the necessary comparisons and tests.

The difference between samples that have been refined and others has been pointed out by Bentz. He found that crude oils from Germany fluoresce yellowish or brownish while refined oils fluoresce a blue color. According to Radley and Grant, light oils containing benzene appear yellowish while the removal of benzene and asphaltenes causes the fluorescence to be brown, and on further removal causes the fluorescence to disappear.

In the new firing time test developed by the author the residues as well as other portions present themselves conveniently for fluorescence analysis. In the scheme of firing time determinations a sample is examined in ultraviolet light before firing; after firing for 0.5 FT another examination is performed and at 0.75 FT an additional examination is performed. In each of these stages it is assumed that the period is known for the sample and that before examination the burning sample is extinguished. The residue, however, is more adopted to fluorescence analysis since the thermomorphological changes which occur in the sample during the test may be of the type which present themselves as highly fluorescent substances and thus may be conveniently examined by this means. Moreover, the residuum deposited above the flame-smoke may be examined. However, the most important part in this is the examination of the usually tarry residue, from some specimens, after a complete firing-time test. Often this will be highly fluorescent, so fluorescent in fact that otherwise identical samples of oils may show non-fluorescence in one case and intense fluorescence in the the second case.

The separation of mixtures containing several components of a petroleum-like nature is easily accomplished by the capillary analysis technique of Danckwort and Pfau. The method consists essentially of placing the end of a strip of non-fluorescent paper in the solution to be examined. By allowing this strip, so placed for several hours, to remain without disturbance it will be found that the solution will have moistened the paper far above the surface of the sample proper. Furthermore, it will be found that for heterogenous samples a separation will have occurred manifesting itself by the appearance of bands or zones on the paper. These may be of varying width, colored, and of varying wetness. On examination by ultraviolet radiation identification of one or more of the constituents often is possible.

A modification of this is suggested by the chromatographic method of analysis. In this procedure sticks of an absorbant material are used to separate the components of a system by their difference in capillarity. The use, therefore, of magnesia rods, calcium carbonate rods or blocks often produces more adequate results than does the use of strips of non-fluorescent filter paper.

A refined and somewhat more quantitative aspect is possible in a few cases where exact delineation of samples is prevented by either of the above methods. This consists essentially of the use of irregular shaped absorbing strips of paper or the use of irregular shaped rods or blocks. A calibration of these often facilitates greater accuracy and more ease in examination.

A method for the detection of mineral oils in turpentine and which depends on fluorescence for the final confirmation has been described by Liberalli. These investigations are stated to have been extend-

"I" Tractor Applications in the Oil Industry

The easy maneuverability of the "I" tractors makes them practical in the oil industry. The "6" and "9" tractors, equipped with winches, can be used for servicing wells, pulling rods, cleaning, etc. All five models are handy for moving supplies in the field. Around refineries and tank farms, the I-4, I-6, and ID-6 are handy for hauling trailers, switching and spotting cars, for snow removal and sweeping.

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I-6—4-cylinder, valve-in-head gasoline engine. Bore and stroke 3⅞ x 5¼ in. 5 forward speeds up to 14 m.p.h. Develops 40.5 engine h.p. at 1,450 r.p.m.

ID-6 DIESEL—Quick-starting, 4-cylinder, compression-ignition, 4-cycle Diesel engine. Bore and stroke 3⅞ x 5¼ in. 5 forward speeds up to 14 m.p.h. Develops 38.5 engine h.p. at 1,450 r.p.m.

I-9—4-cylinder, valve-in-head gasoline engine. Bore and stroke 4.4 x 5.5 in. 5 forward speeds up to 15 m.p.h. Develops 54 engine h.p. at 1,500 r.p.m.

ID-9 DIESEL—Quick-starting, 4-cylinder, compression-ignition, 4-cycle Diesel engine. Bore and stroke 4.4 x 5.5 in. 5 forward speeds up to 15 m.p.h. Develops 51.5 engine h.p. at 1,500 r.p.m.

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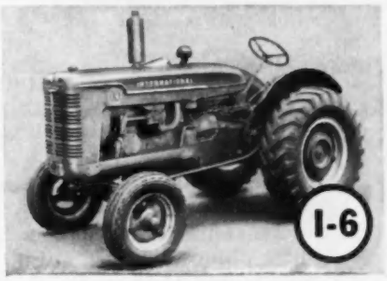

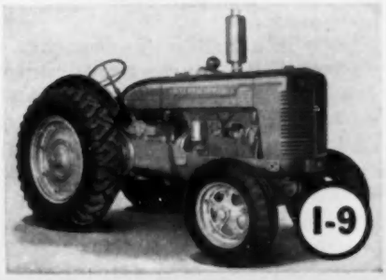

INTERNATIONAL Industrial Power

ed to transformer oils and carried out for checking deliveries against standards.

Muir recommends that lubricating oils and greases be spread for fluorescence analysis in a thin film on a cover-glass made of quartz, or on a cover-glass of ordinary glass and exposed directly. In addition these may be impregnated into filter paper. De Ment recommends that lubricating oils be examined when impregnated on particles of an absorbant of standard size. For greases he states that the best method is to previously dissolve the specimen in a suitable solvent and examine this in ultraviolet light. Muir obtained blue to violet colors in most cases and obtained the added interesting fact that oils which tend to gum on exposure to the air develop a green or a yellow fluorescence. He also found that motor

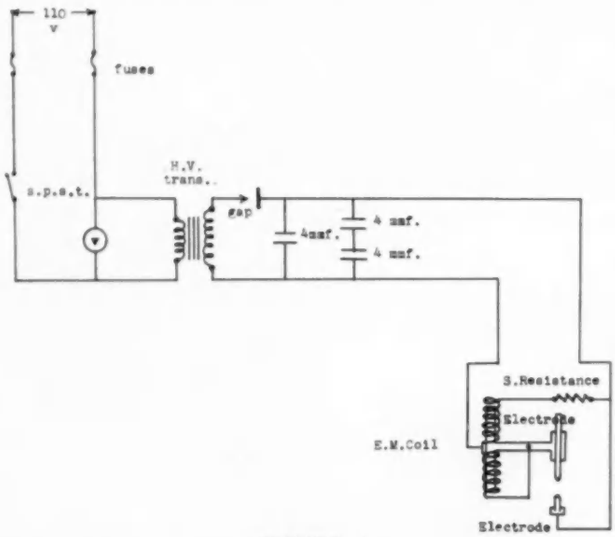

FIGURE 4
Arc lamp circuit for the production of ultraviolet rays used in fluoresence analysis of petroleum products.

grease, ordinary lubricating grease, and wagon grease appeared violet, lavender, and pink respectively. This, however, seems to be of little significance objectively although definitely of more significance subjectively since it shows the ease with which small differences otherwise not detectable may be detected.

In conclusion of this paper on some of the aspects of fluorescence analysis of petroleum products it should be noted that several cautions must be kept in mind regarding all types of tests in ultraviolet radiation.

Primarily significant among these is that the color and intensity of fluorescence are described in words. Words, obviously mere approximations, do not have the concise meaning conveyed by mathematical media.

In addition, fluorescence in specimens often varies with the source of radiation as well as with the sample itself. Moreover, after exposure to ultraviolet radiation, visible light, or the atmosphere, or aging, the fluorescence color and/or intensity of a specimen may vary considerably. Exceptions, of course, being noted in those tests which are well established and those which have stood the test of long usage. In connection with this a generalization is to regard some means of fluorescence examination so sensitive as to border on the over-sensitive. It is common knowledge that many of the apparently over-sensitive tests, fluorescent or otherwise, are often useless for many ordinary purposes.

Regardless of this, the approach that fluorescence analysis provides to many problems arising in the petroleum laboratory is significant since it combines accuracy, simplicity, and delicacy in one—a combination rarely found in scientific modus operandi.

Fundamental Considerations

As is well known, fluorescence consists of the emission of visible light when a substance is excited by one or more of several agents. These exciting agents may be electric discharges at high potential; the radiations from radioactive substances; heat; monochromatic visible radiation; temperature changes with friction; friction and pressure changes; sudden and special changes in chemical equilibrium, either simple or complex in nature; and most important, ultraviolet radiation.

When the emission of light persists after the exciting agent is removed the luminescence which occurs in known as phosphorescence. For theoretical considerations one may regard fluorescence as fundamentally constituting phosphorescence since in both mechansims the emission of visible light occurs when the displaced electron returns to its normal orbit. For practical considerations the time required for this return of the electron differentiates fluorescence and phosphorescence. In other words, one cannot regard the return of an electron to its orbit as being instantaneous. The more concise definition of this, after Hirschlaff, is

$$\tau = \frac{1}{\sum_{m} A_{mn}}$$

where A_{mn} is the transition probability from the state n to any lower state m. The quantities A_{mn} are related to the intensity of the line in the fluorescence spectrum whose frequency is ν_{mn}.

While it is apparent that all substances are fluorescent to a varying degree, since it is known that every physical property possessed by one element has been found to be shared by all the other elements in varying degrees, although with the relatively crude visual acuity of the human eye the observation of fluorescence cannot take place for all substances. The inability to observe fluorescence is explained by

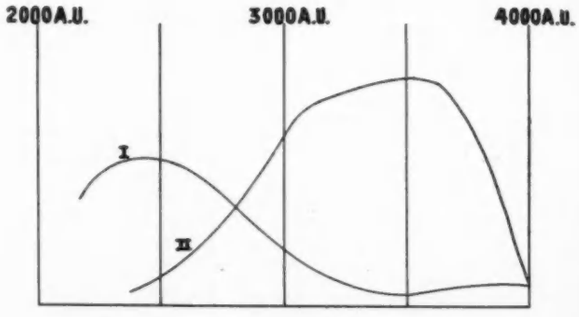

FIGURE 5
Spectral characteristics: I, emission curve for iron arc. II, transmission curve for corex "A" filter 986.

$$\Delta\Xi = C_f + C_q$$

where $\Delta\Xi$ is the change in quenching, or otherwise, the activity of the sample as represented by the effect of the quenching factor on sample C_q acting on an

OIL WEEKLY EDITION

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A MONTHLY BULLETIN COVERING NEWS OF EQUIPMENT AND OPERATIONS IN THE PETROLEUM INDUSTRY

PRODUCTION MODERNIZATION PAYS OPERATORS BIG DIVIDENDS!

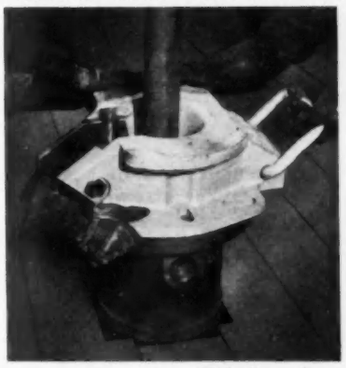
How Open End Tubing Spider Saves Crew Time

Dovetailed End Gate Provides Many Advantages

Your production crews are no better than the equipment you give them to work with. That's a fact!

By modernizing their equipment you can cut lost-time accidents... your crews will get more done each day... and your wells will get back on paying production quicker with less "down" time. Those are "dividends" worth going after.

And here's the ideal tool with which to start off your modernization program ...the Baash-Ross Open End Tubing Spider. Because it can be quickly placed around the tubing without breaking connections, it saves time in setting-up. And actual field tests prove that crews work faster, easier, safer... and move on to the next job sooner... when this Spider is used.



With the end gate removed, the Spider can be quickly placed in position without breaking connections.

Tongues on the solid steel end gate dovetail into the Spider body forming a rigid unit.

Dovetailed Gate

When setting the Open End Tubing Spider into working position, it is only necessary to lift out the solid steel gate that forms one side of the spider, slide the spider around the tubing, drop the gate back into position again, and insert a lock bolt. Note that the gate has *dovetailed tongues* on each side that fit into corresponding grooves in the body of the spider—an important feature that firmly locks the spider *into one rigid unit* and prevents spreading under the *heaviest* loads.

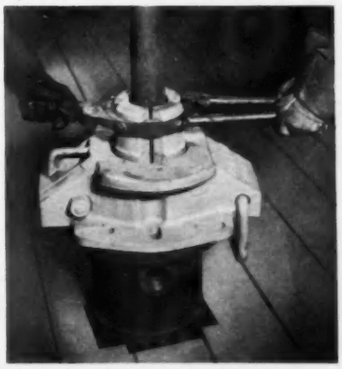
Another valuable feature is the manner in which the four slip segments are mounted in the tong handle—locked into *permanent* alignment so that they act as a *single unit* in gripping the tubing. This insures uniform distribution of the tubing weight over each slip face, prevents swaging or marring of the pipe and insures a rigid grip *that will not slip.*

Production Superintendents: Bulletin 10C gives additional valuable information on the Open End Tubing Spider. A post card with the bulletin number and your name brings it!

Still another time-saving convenience is the quick-acting lock device. A spring latch locks *automatically* when the slips are closed around the pipe—releases *automatically* when the tong handles are opened. No wasted motion or separate operations are required.

With features like these, the crew "sets-up" quicker, works smoother and faster, *saves time all the way through the job!*

This time-saving Open End Spider is available from your nearest Baash-Ross representative. Ask him about it!



The unitized slip assembly is light, easy to handle. The speed-latch locks automatically as slips are closed, releases automatically as handles are spread.

How Operators Are Cleaning Up on Oil

As working hours become shorter and labor costs go up, it becomes increasingly important that every possible effort be given to increasing the working efficiency of your men. Give them a *chance* to do good work *and they'll get more done.*

Now honestly—isn't it rather short-sighted economy to put a crew out bailing (or swabbing) without giving them a way to keep oil and wet mud from slicking up the floor? A slippery floor is not only *dangerous*, but men can't work sure-footed and fast... take *longer* to do the same amount of work as on a dry floor.

Operators are finding that a small investment in a *Baash-Ross Wire Line Wiper* does wonders toward stepping-up working efficiency...

(1) As tools are brought out of the well, it wipes the line clean as a whistle, confining all fluids and gas to the flow lines where they belong. (2) When struck by the rope socket on the bailer or swab coming out of the hole, it releases from the tubing head instantly and automatically, riding out on the top of the socket. (3) Then, when the equipment is run back into the hole, the pack-off unit drops back in place, automatically latching itself in wiping position again.

There's nothing to fool with—nothing to release or re-set. What's more—there's no need to "flag" the line... no need to slow down as the tools near the top of the well... and the swab or bailer can be checked *every* trip without lost time.

Your crews will work better... safer ...and get more done with a Baash-Ross Wire Line Wiper to keep the floor clean. Bulletin 12C gives all the details. Ask for it.

Maintenance? There's no wear-out to it. Just tighten the packing gland occasionally and put in a new set of inexpensive packing rings after a long period of service.

But what a whale of a job it does stepping up the efficiency of your crews. It's just the thing on drilling rigs, too, for keeping the rig clean *and saving expensive drilling mud* while pulling retractable core barrels and survey instruments. Ask your Baash-Ross representative to show you this tool this week.

Production Notes

BAASH-ROSS

AN ENGINEERING REPORT states that operators, in producing flowing wells, too often assume that low rates of flow mean greater ultimate recovery. Actually, however, too-low rates of flow can waste considerably more reservoir pressure than even wide open flow.

BAASH-ROSS

***IN A TYPICAL TEST,** where the ideal flow rate was through a 1/8" choke, the gas-oil ratio per barrel was only 50% greater when the well was opened wide through 2½" tubing. But, as the flow was decreased below the ideal point, the gas-oil ratio increased very rapidly, becoming at 1/32" choke more than 2¼ times that at the ideal flow.*

BAASH-ROSS

FOR THIS REASON operators should base their flow rates, where possible—not on the daily allowable—but on the most efficient flow rate of the well. Where low allowables exist, it has been found better practice to flow the well at the ideal rate part of the day, shutting it in after completing the allowable, than to flow it continuously at a too-low and wasteful rate.

BAASH-ROSS

IN PRODUCTION WORK it is desirable to have a means of quickly adjusting the sheaves in the Crown Block to insure correct line alignment under any string-up. A unique feature of the Baash-Ross Production Crown Block is the provision for such sheave adjustment. Each sheave is locked to the I Beam frame by special clamps that, when tightened, will not slip under the heaviest loads. Yet when desired, it is a simple matter to release the clamps and quickly re-locate the sheaves for perfect alignment. This is just one of the many valuable features engineered into this popular Crown Block.

BAASH-ROSS

WHEN USING CHAINS on production or drilling equipment, engineers advise that less wear and longer life will be obtained if the chain is installed so that the narrow ends of the links are in the direction of travel.

Marine Boilers Turn Landlubber

The garden variety of oilfield boilers took a back seat recently when two specially-designed marine type boilers, each generating 17,500 pounds per hour of *super-heated* steam, were placed in operation on a California deep well. This is the first installation of its kind in the industry. The boilers are of the water tube type, equipped with evaporator, condenser and three cooling towers. Features include reduced gas consumption, greater safety, lower upkeep costs and elimination of troubles from using bad water (regardless of water supply, only *distilled* water reaches boiler tubes). Sufficient power is generated so that either boiler can carry the full load, if required.

Other surface equipment used is in keeping with the heavy duty boilers, as the well reportedly will drill considerably below 12,000 feet.

otherwise fluorescent sample C_f. But $^{\Delta}\Xi$ represents a deviation of magnitude great enough to cause fluorescence in the sample to drop to an optimum which may be below the limit of visual observation

$$C_f + {}^{\Delta}\Xi \longrightarrow C_o$$

where C_o represents the non-fluorescent state of the specimen.

Ξ is an activity factor since it may be fundamentally represented as a negative quantity ($-\Xi$) in quenching and a positive quantity ($+\Xi$) in excitation.

The tremendous effects of small quantities of foreign materials on the fluorescence color and intensity of substances is well known. These show to a great extent in the fluorescence of oils, greases, and other petroleum products. Likewise, the origin, history, treatment, age, atmospheric exposure; chemical history, and so on, have a tremendous effect on the fluorescence of a petroleum specimen. When these are to favor or reduce the intensity of fluorescence they are likewise termed activity factors. Correspondingly, a quenching agent causes an action to occur in the sample whereby the intensity or color are reduced to the C_o state.

Both excitation and quenching of fluorescence are defined as the ratio of the fluorescence intensity in the presence of the foreign agent to that without the added agent

$$(\text{Quenching}) - \Xi = \frac{\xi_o}{\xi_{oo}}$$

where ξ_o and ξ_{oo} represent the agent without a quencher and with the added factor which results in quenching, respectively. Whereas

$$(\text{Activation}) + \Xi = \frac{\xi_o}{\xi_{ooo}}$$

where ξ_o and ξ_{ooo} represent the agent without an activator and with an added activator, respectively. This result of this being excitation.

The role of an activity factor Ξ is undoubtedly quite complex, furthermore, the activity factor itself appears to be by no means simple. It is regarded as resolvent into components

$$\Xi_\alpha = \Sigma\Xi_1 + \Xi_2 + \Xi_3 + \Xi_4 + \Xi_5 \ldots\ldots\ldots$$

or,

$$\Xi_\beta = \Sigma\Xi_1 + \Xi_2 + \Xi_3 + \Xi_4 \pm \Xi_5 \ldots\ldots\ldots$$

and so on. The latter relationship likely approximates a truer condition in all fluorescing systems since all excited substances are obviously under the influence of several Ξ at any one instant rather than a single exciting agent or quenching agent.

While the fundamentals presented are general in scope and describe a complex action in rather simple terms they give an idea of some basic actions involved in the luminescence of substances in ultraviolet radiation.

Of the many attempts to correlate fluorescence with chemical structure or physical properties few have had any real significant effect on the fundamental development of fluorescence analysis. Correlations have been made and correlations will be made, but the attempt to ascribe fluorescence to any certain chemical structure, cyclic nucleus, radicle, or ion, may be evaluated by the number of times such propositions have been put forth and the number of times these same propositions have been supplemented with numerous exceptions.

For example, in water fluorescein fluoresces an intense greenish-yellow color while phenolphthalein was considered by some not to fluoresce. In this the pyrone ring was considered to be the cause of fluorescence (Ξ) but since then it has been found that phenolphthalein also fluoresces in alkaline solution.

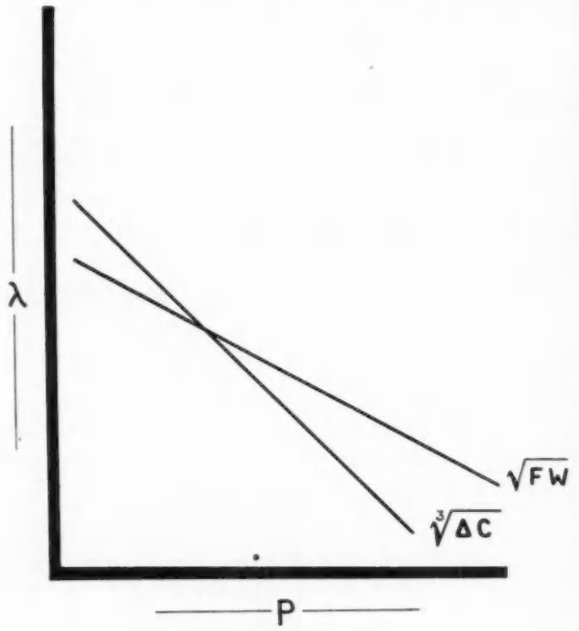
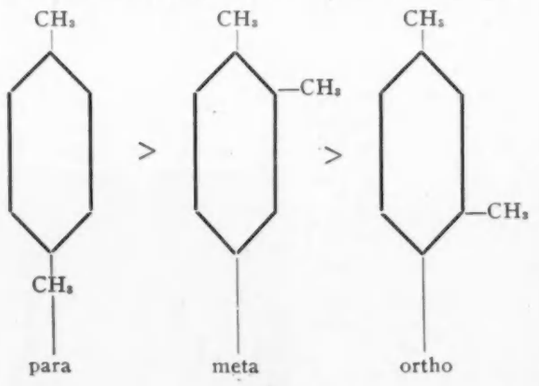


FIGURE 6

Correlation of physical properties and the wavelength of the fluorescent light emitted from dimethylnaphtheurhodine in a series of organic solvents.

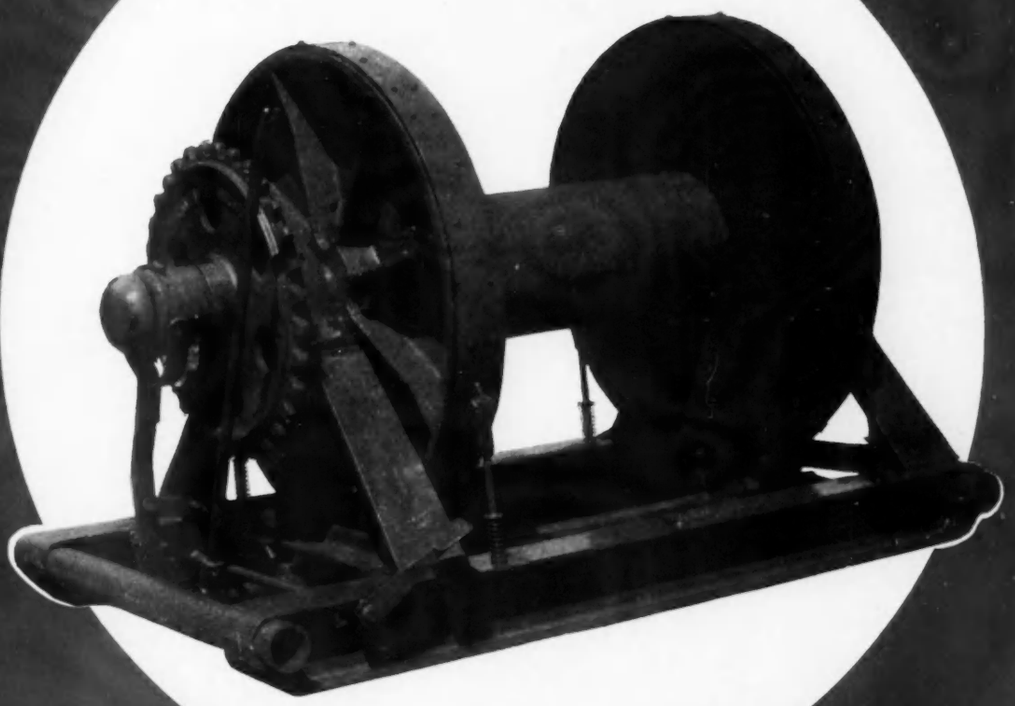
Regarding the correlation of fluorescence and physical properties a rather close approximation is shown in Figure 6. In this the correlation was obtained for dimethylnaphtheurhodine in a series of solvents. It is only approximate, however. The wave length of the fluorescence of dimethylnaphtheurhodine in the series of organic solvents was plotted against the square root of the formula weight of the solvents and against the cube root of the heat of combustion of the series of solvents.

The position of groups in organic structure may have an Ξ action. Hirschlaff's illustration of the order of quenching of the xylenes is according to the position of the methyl groups on the benzene nucleus

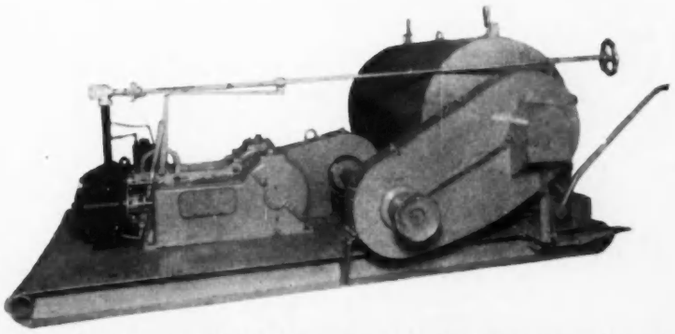


Moreover, Eisenbrand found that benzene has no quenching action itself, but in terms of Ξ the addition of hydroxyl, methoxy, and methyl groups to the nucleus exerted quenching effects.

SPEED UP WIRE LINE OPERATIONS



with this Powerful Unitized Reel



Powered by fully enclosed oil bath engine, eliminating interference with regular drilling engine or draw works. Compared to use of a power take-off from draw works, this engine is saving $500.00 a month in many cases . . . more where water is scarce. Engine and reel are unitized on compact, heavy-duty skid.

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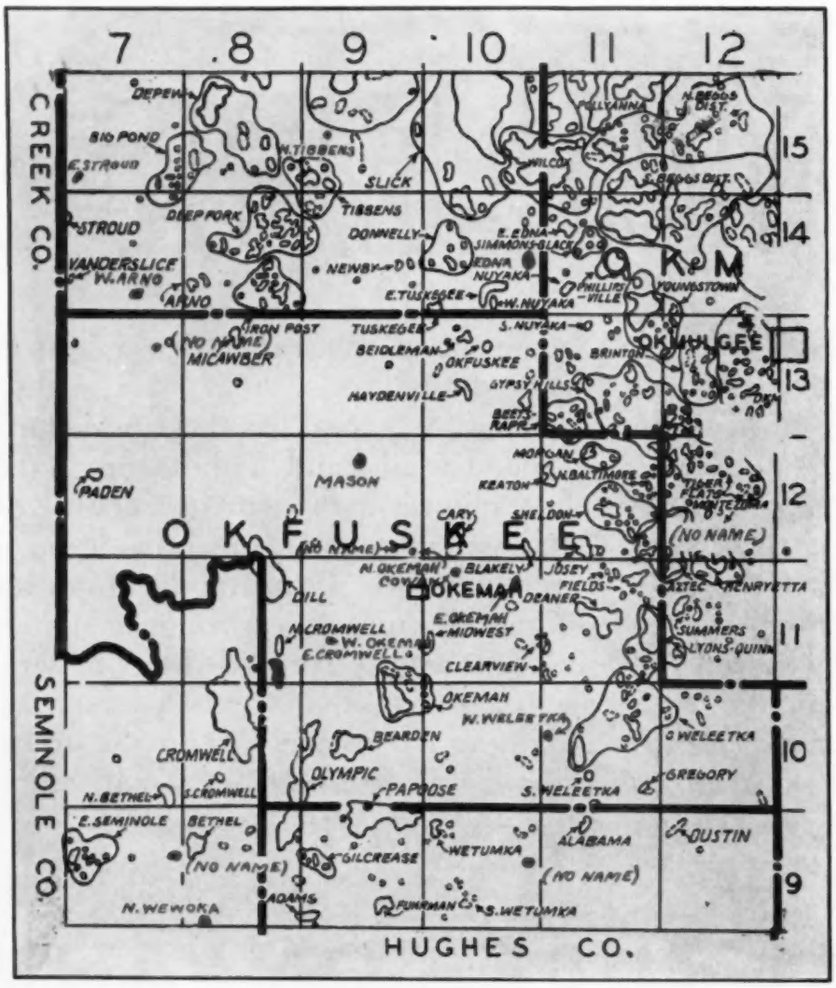
***NATIONAL SEAMLESS** means pierced from solid billets of finest quality steel. Only sound and flawless steel can be successfully pierced, since any defects in the steel are certain to be exposed by this process. At every stage in production, thorough tests and inspections redouble your assurance that every length of* NATIONAL *Seamless will display the same uniform wall strength, dimensional accuracy, and uniformity in all physical properties.*

Walls without Welds



Recent discoveries in the old densely drilled area of Central Oklahoma are shown in color

Detailed Exploration Finds New Fields in Oklahoma

By FRANK TAYLOR, Staff Writer

THE densely drilled area of Central Oklahoma is getting its second wind. The success of an exploratory campaign in this region indicates the possibilities of finding new oil production in old heavily prospected producing territories, not only in Oklahoma but probably elsewhere.

During the early months of last year, when Oklahoma first was feeling the effects of declining flush production, operators concentrated much exploratory effort in Creek, western Okmulgee, northern Hughes, eastern Seminole and throughout Okfuskee County, site of many of Oklahoma's more prolific fields of the past. The net result has been that this area, enclosing only 42 townships, has produced 17 new fields despite earlier drilling that attained large proportions in the early twenties. The activity is the more remarkable when it is seen that this region, enclosing less than one tenth of the state's oil acreage, accounts for more than one third of the new pools for the past year. While in-

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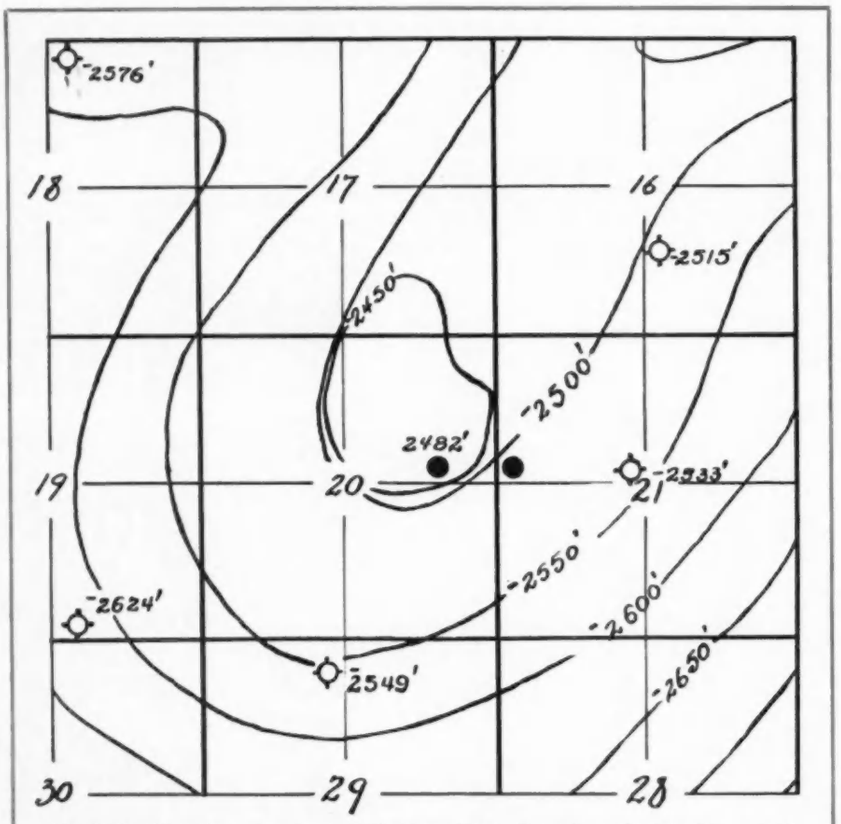

Typical subsurface structure of the type being found productive in central Oklahoma by means of detailed studies. The area shown is in Okfuskee County, with datum contours based on top of the Cromwell sand at 50 foot intervals.

dividually the new discoveries are comparatively small, collectively they represent a sizeable volume of new oil.

The present Oklahoma play is only expression of a definite trend toward a closer and more detailed inspection of previously explored areas that is yielding good results. Illinois, in some respects, is a similar scene on a vastly greater scale. Present deep drilling in North Texas is an activity paralleling Central Oklahoma re-development. Indiana and Kentucky, as well as Michigan, are witnessing revivals of interest. Flank development along the salt domes of the Gulf Coast is another example of the success of this type of work.

In Oklahoma, re-development should not halt in the Central Counties. There remains northern Okmulgee and the Wagoner-Tulsa County triangle. Eastern Osage and Washington Counties probably could be re-examined profitably, although Rogers and Nowata Counties have been well combed by secondary recovery and water flood operations.

Another province is the southern Oklahoma trend through Carter, Stephens and Comanche Counties. Kay County, while probably not offering possibilities as favorable as other sections of the state, must not be ignored.

On the first consideration, the older sections that have produced constantly decreasing volumes for a number of years past do not seem to offer a very great incentive to exploration. But on the other hand, through the application of new methods of exploration either singularly or as a pair with each complementing the other, then the prospects are much brighter. This is well borne out by recent activity in the described area where results would give an optimistic note to secondary exploration.

Interest in Central Oklahoma counties has been sporadic since early drilling. While the focal point of exploration has jumped from point to point along Nemaha Ridge, through Milroy-Fox, through the Ardmore Basin and into the Anadarko Basin, there has been no serious break in a slow but steady drilling program centering in the mentioned counties. Not infrequently, some unusually good strike would bring a shower of local tests, but it remained for the St. Louis district to spark present activity.

In 1935 and 1936, trend drilling and tests between pools in the St. Louis area of Pottawatomie County and adjacent areas in Seminole County were so successful in developing new production that central Oklahoma operators in general took a second look at areas of older drilling. If such production has been passed up in St. Louis, had not similar production been overlooked in Creek County; Okfuskee? With improved seismograph equipment, better understanding of subsurface conditions, and a more complete picture of the areal distribution of pay formations it was felt the area could be re-examined with a fair degree of success.

Logs of old wells are being dusted off and scrutinized carefully Particular attention is given logs of failures drilled along trends. Every spot within the entire area not actually condemned with a deep well, is considered back in the play. Deeper production has followed in some shallow producing areas where depleted wells have been deepened.

Subsurface Geological Investigations

While for the most part, logs and subsurface work is forming the basis for newer exploratory effort, large areas are checked as prospective units regardless of past development. Subsurface geological investigation is contributing greatly to the success of re-development; even more so than might at first be supposed. Study of well logs has shown a number of highs and trends. Nosings and prominent terraces are indicated in some studies. Correlations frequently show the existence of domes and anticlines within a local area to be a probability, but seldom are sufficient in themselves to define exact positions.

Seismograph takes up the problem at this point. With all sub-surface work indicative of the presence of a structural feature, the area is shot in detail. Continuous, reflection shooting with 12 geophone locations between shot points one quarter-mile apart, is the routine method proving successful throughout the area. A high percentage of Central Oklahoma discoveries of the past two years should be attributed to this type of detailed shooting, backed

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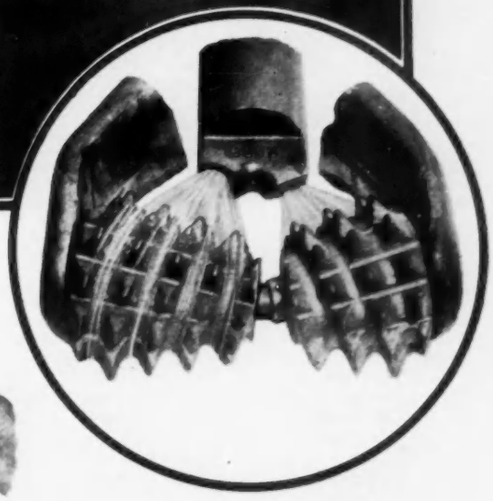

The REED *Interchangeable* MUD NOZZLE ASSEMBLY

is easily replaced, and various sizes of jets may be had to accommodate any mud pump capacity or circulation requirements. Pump pressure holds the upper flange of the nozzle onto a gasketed shoulder in the shank of the bit head; thus providing a shut off of any circulation around the assembly. It is locked in place by a simple spring lock ring. For special work requiring maximum full opening through the bit shank such as "Reverse Circulation," "Drilling In," etc., the nozzle assembly may be left out entirely without impairing the strength or safety of the bit.

The jets are oval in shape to reduce turbulence, increase severity of jet action, and to distribute the cleaning over all cutter teeth. They are directed at an angle and at the roots of the cutter teeth so that the grooves between the teeth are met by the jets to thoroughly clean away any picked-up formation.

Reed *Interchangeable* Mud Nozzle Assemblies are available for all Reed Bits from 5⅝" through 13" range.

ROLLER BIT COMPANY

by experience with the problems peculiar to the area.

While there are a number of possible horizons from which to reflect, Viola lime and the Wapanucka-Cromwell zone are probably the most generally used. In picking highs on other zones, the strata are broken up as found necessary. The accompanying subsurface map of a recent strike shows a wide nosing from northeast to southwest, first found and mapped through examination of logs with datum top of Cromwell sand at sub-sea 2500 feet or more. A narrowing of the nose in NE section 20 was indicated and with the additional aid of shooting, a Hunton lime high was indicated and drilled to add a new pool to the area. A second producer has been completed recently on the same feature.

Faults and Anticlines

The entire province through this part of Oklahoma is monoclinic with strata gradually rising to the east and north. This regional feature is interrupted by faults and anticlines, and by some few unconformities and lenses. The area is one that is particularly rich in number of possibile pay horizons. From the surface down to depths not exceeding 5500 feet, the following horizons are potentially productive:

Oswego	.....	Lime
Prue	.....	Sand
Calvin	.....	Sand
Senora	.....	Sand
Earlsboro	.....	Sand
Booch	.....	Sand
Gilcrease	.....	Sand
Wapanucka	.....	Lime & Sandy Lime
Cromwell	.....	Sand
Misener	.....	Sand
Hunton	.....	Lime
Viola	.....	Lime
Simpson Dolomite	.....	Dolo
Wilcox	.....	Sand

There is probably no well in the area in which all these strata have been drilled, through they are present as objective strata in Central Oklahoma in general and particularly in that section now active and where all these formations are producing from wells drilled in years past. This multiplicity of horizons gives the wildcat try an added incentive when coupled with the fact that drilling depths are either average or less than average. In addition to these favorable considerations, there is nothing to prohibit low drilling costs. Formations are generally hard, requiring the use of rock bits from surface to total depth, but with few exceptions the hardness of the strata does not result in excessive wear or in slow footage. There is little trouble from high-pressure gas but the better operators keep a close check on their mud. This is for the dual purpose of eliminating hazards arising when a pay formation is unexpectedly topped, and to keep the cuttings coming out while drilling such formations as the Cromwell where a number of strings of drill pipe have been stuck.

Casing Program

Wells generally complete with an oil string of 7-inch casing while some of the more active operators have been using slim-hole equipment exclusively and finishing up with a 5½-inch string. Tubing is 2 and 2½-inch with the latter in the majority in the larger holes. A high percentage, considering the development age of the area, of the wells flow their initials and continue flowing for many months.

Drilling costs are relatively low. In the northern part of the described province, where wells are usually completed above 3000 feet, total cost is around $13,500, including a string of casing and tubing. In most of the remainder of the section, through most of Okfuskee County, drilling depths are 3500 feet, and here a well similarly completed costs $18,000.

Equipment being installed in the fields of Central Oklahoma is carefully selected for the particular job at hand. Most fields and formations are of long life, and operators are heeding the time element as wells as initial expense when installing pumping, treating or other equipment. Operations are following modern practices. One gas-injection program is in progress and others are scheduled. Plans have been completed for the electrification of some pumping wells in East Cromwell and similar plans are under consideration for at least two other fields.

Important Future

Central Oklahoma counties are more firmly established than ever as important to the future of the state's oil production. In a study of reserves recently added to the total for the state, the mapped area accounted for 6,704,000 barrels since January 1, 1940. This is the result of new fields, only, and an additional 4,286,000 barrels can be attributed to proving new horizons in oil fields and extending the productive limits of some of the older areas. The total added reserve for the area since the first of 1940 is 10,990,000 barrels, or only a little less than one third the reserve estimated as having been added to the state's total during 1940 through new discoveries and new horizons combined.

In the mapped area, some 220 wells were 1940 completions. In the same area 1941 looks brighter with an estimated 245 completions. It is expected that wildcatting effort will bring more fields into production during 1941 than during the past year, this assumption being made on the basis of greater accuracy of locating favorable structural conditions. If this result follows, and there is every reason to expect it, then the area is due for a steady development of relatively small structures for the next four years.

Acting to spur development is the quality of the oil produced in the area. While the grade varies somewhat with the formation and geologic age, the oil is almost free of sulphur, is paraffin base, and usually above 32 gravity. A fractional analysis is normal with BS and residium at a minimum. Some distillate fields have recently been proven in Hunton lime, with the distillate being high grade and gas immediately marketable.

Because the area is an old one, it is rather well serviced by pipeline systems and well connections are not difficult to obtain for either new or old production. Oil is pipe line quality or easily treated to such. Price scale ranges from $1.00 for 35 gravity with a 2-cent jump per degree gravity change to a top of $1.10 per barrels for 40 gravity and up.

Currently, drilling activity in the mapped area includes some 80 wells, of which 16 are wildcat tests. In all, within the total area of the 5 counties disregarding the boundaries of the map, there are about 150 wells drilling with the maximum drilling density in Okfuskee County.

Current explorative activity is divided almost equally between attempting to project trends and to locate individual structures. Eight seismograph parties are working in the area. Particular attention is being given western Okfuskee and northeast Seminole Counties. Northern Hughes County has been relatively quiet recently except in the Wetumka area, but two tests are scheduled soon, one to look at Cromwell and the other check Gilcrease sand at a shallow depth.

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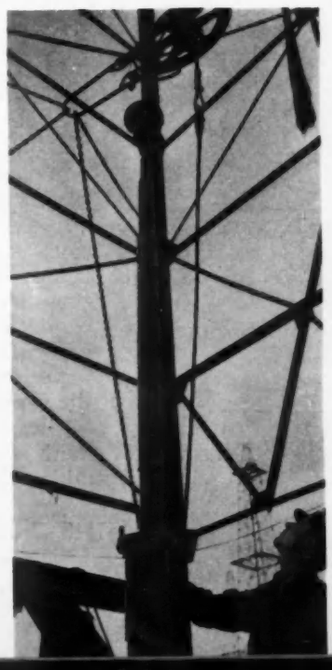

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Systematic Calculation of the Differential Vaporization of a Crude Oil

By RALPH F. NIELSEN, The Pennsylvania State College

THE terms "flash vaporization" and "differential vaporization" are common terminology in petroleum production. Experimental determination of the two types of vaporization curves on bottom-hole samples constitutes part of the routine of many production laboratories. The method of calculating flash vaporizations by the use of "equilibrium constants" is well known. Little, however, has been written in the production literature about the systematic calculation of differential vaporization. The equation for it is subject to more limitations than the calculation of flash changes. In particular, the values of the equilibrium constants for the various constituents must remain in a constant ratio to each other over the range covered by one calculation. This is equivalent to saying that Dalton's law of partial pressures and Henry's law of solubility of gases must be obeyed over the range in question.

The difference between the two types of vaporization may be illustrated as follows: Suppose a sample of oil has a vapor pressure of 500 pounds at 80° F. If it is to be flashed isothermally to 200 pounds, the mixture is allowed to expand, but the gas coming out of solution is allowed to remain in contact with the liquid, and the mixture agitated, until equilibrium is established at 200 pounds and 80°. If it is to be "differentially vaporized" to 200 pounds (isothermally), the mixture is expanded very slowly and the gas removed from the vessel as fast as formed. Constant agitation is necessary so that at any instant there is complete equilibrium between the liquid and the small (theoretically infinitesimal) amount of gas present. One can also speak of "flashing" a mixture of gas and liquid from one pressure and temperature to another, but obviously differential vaporization applies only to a liquid. It differs from distillation in being isothermal instead of isobaric.

True differential vaporization is difficult to realize in the laboratory, especially at low pressures, and in any case requires special apparatus. Ordinary evaporation, such as that from an open tank, is not true differential vaporization since there is insuffcient agitation. Even in evaporation caused by bubbling air or gas through an oil, equilibrium is not maintained between the whole body of liquid and the surfaces exposed to the bubbles. However, such evaporation is probably better calculated from the differential vaporization equation than by other methods.

The differential vaporization equation for the case where Raoult's law is obeyed may be found in well known texts on evaporation or distillation. For completeness, the derivation will be given here. Suppose at any time the liquid contains A, B, C. — mols of the respective components. Let the vapor pressures of the components in the pure state be P_A, P_B, etc. By Raoult's law the partial vapor pressures from the solution are

$$\frac{AP_A}{A+B+C\text{——}}, \quad \frac{BP_B}{A+B+C\text{——}},$$

etc. Assume an infinitesimal amount, dN mols, to be removed as vapor. If the concentrations in the vapor state are proportional to the partial pressures, the mol fractions in the vapor are

$$\frac{AP_A}{(A+B+C\text{——})\ (AP_A+BP_B+\text{——})}, \quad \frac{BP_B}{(\ )\ (\ )},$$

etc. Therefore, the number of mols of A removed will be

$$dA = \frac{AP_A dN}{(\ )\ (\ )},$$

the number of mols of B removed will be

$$dB = \frac{BP_B dN}{(\ )\ (\ )}, \text{ etc.}$$

Dividing the one by the other,

$$\frac{dA}{A} = \frac{P_A}{P_B}\,\frac{dB}{B}.$$

Integrating,

$$\log A = \frac{P_A}{P_B}\log B + C \text{ (a constant)}.$$

If A_o and B_o refer to some reference time, or to initial amounts in mols,

$$\log A_o = \frac{P_A}{P_B}\log B_o + C.$$

Dividing,

$$\log\frac{A}{A_o} = \frac{P_A}{P_B}\log\frac{B}{B_o},$$

or more conveniently,

$$\log\frac{B_o}{B} = \frac{P_B}{P_A}\log\frac{A_o}{A}.$$

A similar relation exists between A and C, B and C, etc.

Owing to the form of the equation, it is immaterial whether natural or common logarithms are used. It is seen that since we are dealing only with the ratio of P_A to P_B Raoult's law need not necessarily be obeyed. The constants of Henry's law of solubilities, or simply the "equilibrium constants," may be used instead of P_A, P_B, etc., provided that the ratios do not change over the range covered in a calculation.

A series of successive flash vaporizations, or "stage trappings," approaches differential vaporization as the number of stages becomes very large (the difference in pressure between each stage becomes very small) and if the temperature and the initial and final vapor pressures of the liquid are the same in the two cases. In order to illustrate this, as well as the method of calculation, we have taken the case of a three-compo-

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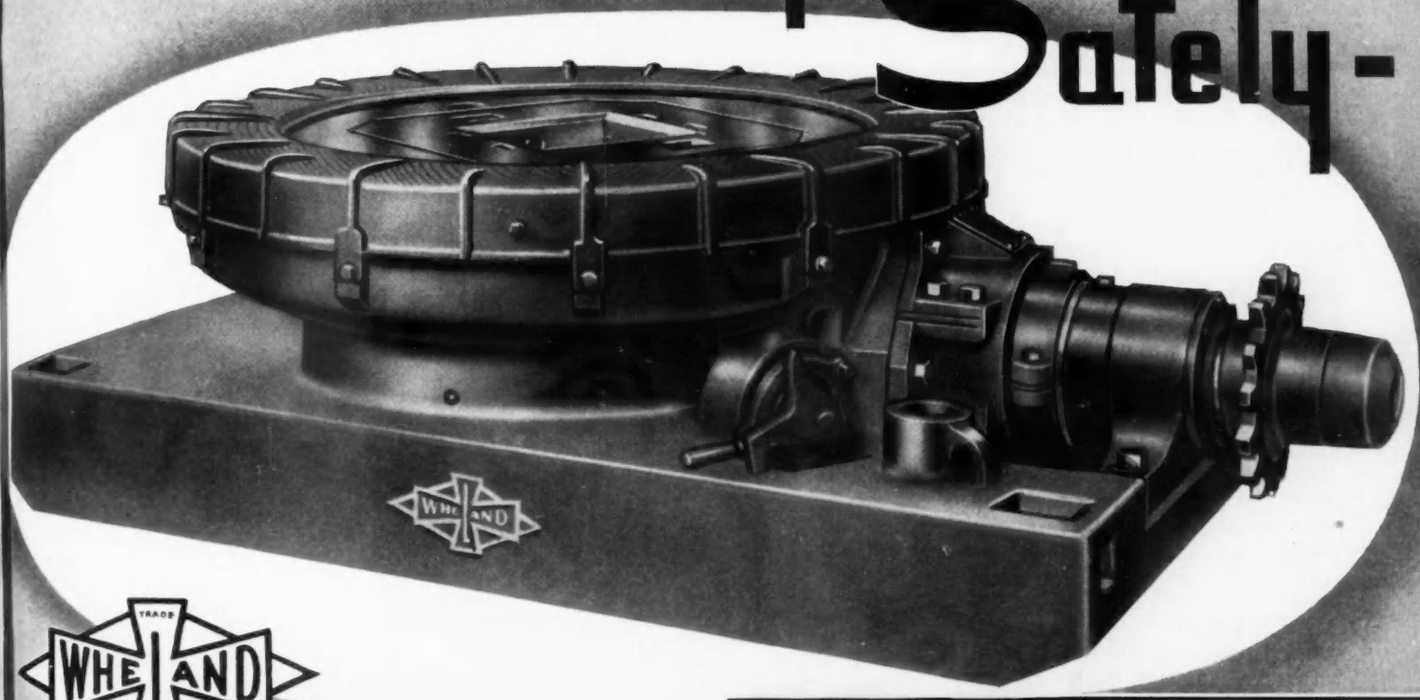

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nent system in which Raoult's law is obeyed. A_o, B_o and C_o are, respectively, .2, .3, and .5, and P_A, P_B, and P_C 500, 100, and 30 pounds. Assume that the differential vaporization has taken place to the extent of ¾ of A being removed. The calculation is shown in Table 1. A, B, and C are denoted in general by X in the column headings.

The total of the last column, 83.4, is the final vapor pressure of the liquid. The initial vapor pressure is the total of Column 3, 145 pounds. By assuming different values for A, we may see how the composition changes as more and more liquid is evaporated. Thus, knowing the molal volumes, we can obtain a graph of volume of liquid left versus vapor pressure, or knowing also the molecular weights of specific gravity versus volume left or versus vapor pressure.

To show the relation between differential vaporization and a series successive flash vaporizations, such a calculation has been carried out for 1, 2, 4, and 6 flash stages from 145 pounds to 83.4 pounds with removal of the vapor phase after each flash. The results are plotted in Figure 1 in terms of the number of mols of each constituent removed in going from 145 pounds to 83.4 pounds in increasing number of stages. The values for differential vaporization are marked at the right of the graph to show that these would be approached as the number of stages is indefinitely increased.

It will be observed from the curves that the loss of the heavier constituents becomes less with an increasing number of stages. This is the reason for the common practice of multi-stage trapping of crude or "distillate."

TABLE 1
Differential Vaporization of a Three-Component System

X_o	P_x	X_oP_x	P_x/P_A	Log X_o/X	X_o/X	X	Mol Fraction	$P_x \times MF$
.2	500	100	1	.60206*)	4*)	.0500*)	.0678	33.9
.3	100	30	.2	.12041	1.3195	.2274	.3083	30.8
.5	30	15	.06	.03612	1.0867	.4601	.6239	18.7
		145				.7375	1.0000	83.4

*) Assumed.

TABLE 2
Differential Vaporization of a Crude

Constituent	P_x	X_o	X_oP_x	P_x/P_1	Log X_o/X	X_o/X	X	MF	$MF \times P_x$
C_1	3800	.0020	7.6	1	1.30103	20.	.0001	.0001	0.4
C_2	570	.0031	1.8	.15	.19515	1.5675	.0020	.0020	1.1
C_3	174	.0122	2.1	.04579	.05957	1.1470	.0106	.0107	1.8
C_4	55	.0305	1.7	.01447	.01883	1.0443	.0292	.0295	1.6
C_5	17	.0306	.5	.00447	.00582	1.0135	.0302	.0305	.5
C_6	7	.0448	.3	.00184	.00239	1.0055	.0446	.0450	.3
C_{7+}	1	.8758	.9	.00026	.00034	1.0008	.8751	.8822	.9
			14.9				.9918	1.0000	6.6
					3.30103	2000.	10^{-6}	.0000	0.0
					.49515	3.127	.0010	.0010	.6
					.15115	1.4164	.0086	.0087	1.5
					.04777	1.1163	.0273	.0277	1.6
					.01476	1.0346	.0296	.0300	.5
					.00607	1.0139	.0442	.0448	.3
					.00086	1.0020	.8740	.8878	.9
							.9847	1.0000	5.6
					6.30103	2×10^6	10^{-9}	.0000	0.0
					.94515	8.814	.00035	.0004	.2
					.28852	1.943	.0063	.0065	1.1
					.09118	1.2335	.0247	.0253	1.4
					.02817	1.067	.0287	.0294	.5
					.01159	1.027	.0436	.0447	.3
					.00164	1.0038	.8725	.8937	.9
							.9762	1.0000	4.4
					12.30103	2×10^{12}	10^{-15}	.0000	0.0
					1.84515	70.008	.0000	.0000	0.0
					.56326	3.6582	.0033	.0034	.6
					.17800	1.5067	.0202	.0210	1.2
					.05499	1.135	.0269	.0280	.5
					.02263	1.0535	.0425	.0442	.3
					.00320	1.0074	.8694	.9034	.9
							.9623	1.0000	3.5

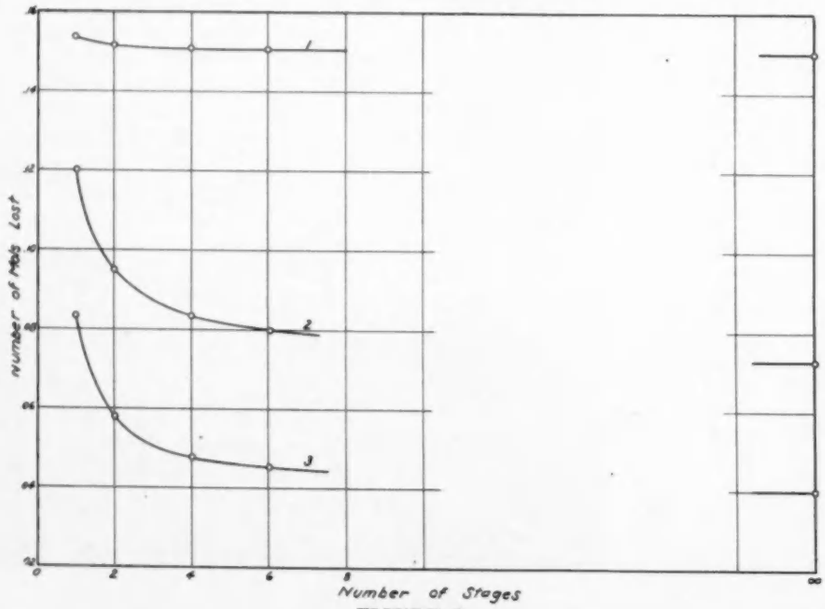

FIGURE 1
Curves showing that differential vaporization is theoretically equivalent to an infinite number of stage (flash) separations. Curves 1, 2 and 3 show, respectively, mols of constituents 1, 2 and 3 lost when the vapor pressure changes from 145 to 83.4 pounds isothermally.

The systematic calculation of differential vaporization of a crude at 100° F. is illustrated in Table 2. Values of P were obtained by multiplying the equilibrium constants (Sage, Hicks, and Lacey; A.P.I. 1938) at 14.7 pounds absolute and 100° by 14.7. From the totals of the eighth and last columns, it would be possible to obtain a plot of vapor pressure versus mols of gas lost. From molecular weights and tables of partial volumes such as those of Sage and Lacey (A.P.I. Proc. 1939), plots of gravity versus shrinkage can be calculated by well known methods. The ridiculously low figures assumed for methane in the latter part of the table are only for arithmetic convenience. The same curves would be obtained if methane was dropped out and the calculations based on P_x/P_2 in this part of the table.

THIS BLOWOUT WAS CAUSED BY A LEAKY CASING HANGER!

IT COULD HAVE BEEN PREVENTED WITH A MODERN CAMERON CASING HEAD

During routine drilling operations on an outpost location in a high pressure South Texas field, **this well blew out from a highly charged water sand at 1760 feet.** Upon investigation it was found that a defective casing seal in a completed well nearby had caused the upper sands to become gas-charged.

This and numerous similar incidents demonstrated the urgent need for casing heads which would positively prevent leaks between casing strings. As a result, Cameron engineers designed two types of casing seals which may be hydraulically tested prior to completion of the well—a **welded** seal with Type "M" Testing Flange, and a **neoprene-asbestos** seal with Type "WM" Testing Flange. (See below.)

It should be noted that Cameron Testing Flanges employ a repackable plastic packing seal which serves a dual purpose: (1) It assures the operator of getting a test on the casing seal without the necessity of removing any part of the casing head assembly in order to repair this seal. In event the test seal leaks, it may be tightened by simply injecting more plastic through a port in the testing flange. (2) It serves as an important secondary seal of the space between casing strings. If, for any reason, the primary seal should leak after completion of the well, this secondary plastic packing seal may be safely repacked under pressure to effect a pressure-tight seal of the space between casing strings.

Complete details on all Cameron well heads are carried in the Composite Catalog, or a copy of the Cameron Catalog will be gladly sent to interested operators on request.

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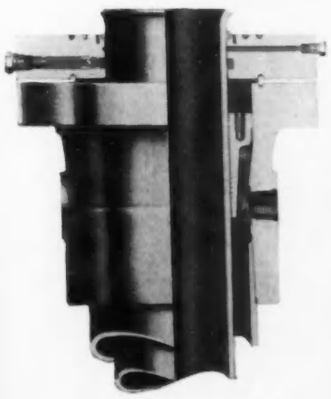
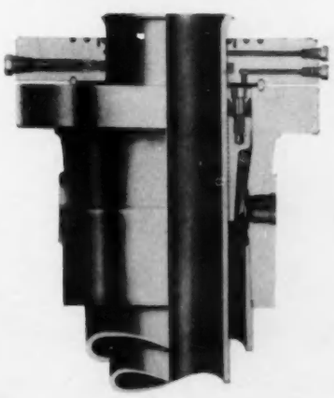


The Type "M" Test-Weld Flange at left provides a welded seal of the space between the casing strings, and the plastic packing seal permits testing the weld before installing casing head spool or tubing head. Also, the plastic seal (which may be safely repacked under pressure) assures the operator of a pressure-tight joint throughout the life of the well.

The Cameron Casing Head Assembly at right features neoprene-asbestos packing as a primary seal of the space between the casing strings and is recommended for use where Grade N-80 casing makes field welding impractical. The Type "WM" Testing Flange permits the testing of the primary seal before installing casing head spool or tubing head. Also, the plastic packing seal perpetually guarantees the operator against casing head leaks since it may be safely repacked under pressure at any time.

TYPE "WM" TESTING FLANGE FOR NEOPRENE-ASBESTOS SEAL



"CAMERON-IZE" For Maximum Safety ALL The Way!

Practical Hints for the Drilling Rig

The following reports on rig practices contain suggestions of a practical nature, designed to improve operating efficiency and safety. These items come from all parts of the United States and give an excellent picture of the ingenuity being brought into play in drilling operations.

Contributions to this page will be paid for at the rate of $5 for each illustrated item accepted. Address contributions "The Editor, THE OIL WEEKLY, Houston, Texas."

1. MATERIAL HANDLING

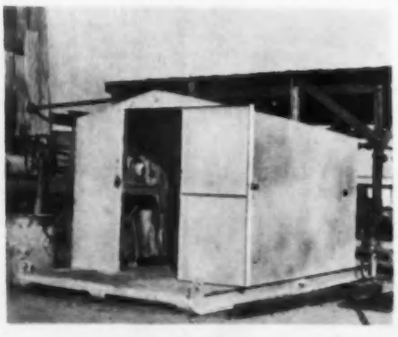
Steel Ramp Facilitates Loading Heavy Objects on Truck or Pipe Rack

This steel ramp moved up to pipe racks or truck bed aids in handling heavy objects.

TO AID in loading and unloading heavy equipment and supplies at drilling location, one company utilizes a movable all-steel ramp that can be set up to either the truck bed or the pipe racks.

The framework of the ramp is welded of 3-inch pipe. A simple pipe cross-bracing and several horizontal members support the lower side of the sheet-steel bed of the ramp, welded at either side to the bottom of each of the two sloping side members.

The ramp can be skidded easily to any point on the location where considerable material is being handled. It has particular time- and labor-saving value when bulky objects such as reamers, large bits, drill pipe subs and partially assembled Christmas trees are being handled.



This warehouse at drill site makes supply of small parts always available.

2. STORAGE

Warehouse at Rig for Small Objects

THE potential danger of a costly fishing job or loss of part of a hole just because a certain part or repair tool could not be obtained in time, has to a degree been eliminated by a company operating in more remote areas that are not so readily accessible to their own company warehouse or supply houses.

An all-welded, sheet-steel covered small supply house is located conveniently near the well, fitted on the inside with tool racks, shelves and drawers. Generous supplies of new or special tools, hole-surveying and other special equipment, can be stored in this handy, weather-proof shelter. Ample floor space provides room for heavier, bulkier objects such as casing float shoes, core barrels and new bales of soft rope. Electric light conduits and outlets built into the roof facilitate hooking up to any electric lighting circuit. A heavy hasp on a tight-fitting door enables the building to be locked when not in use or while moving from one location to another.

Steel eyes welded to each corner of the I-beam skid base provide an easy means of loading the entire unit on a truck when it is to be moved.

3. EQUIPMENT CARE

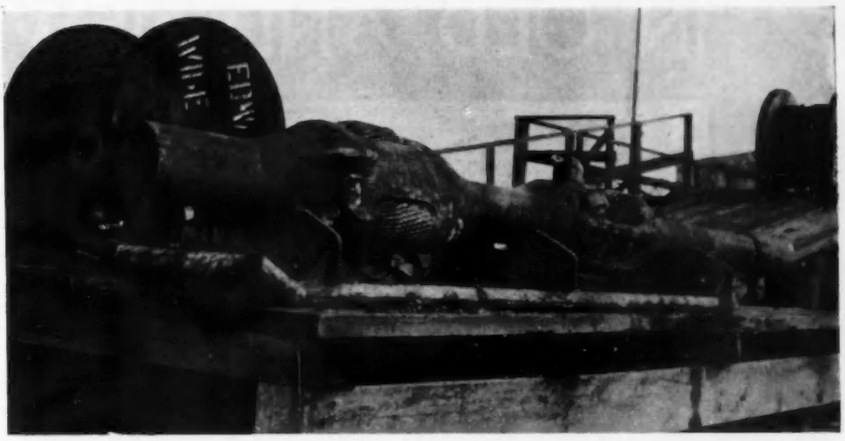
Reamer Protected by Cradle on Skids

SUCCESSFUL use of side-wall reamers depends to a great extent on the manner in which the tool is handled before and after each time it is used in a well. By constructing a skid-mounted cradle of 2-inch pipe and vertical cradle sections cut of ½-inch steel plate, one large company encounters much less difficulty in properly maintaining each of its reamers.

The individual rollers and tool joints are protected by the device from contact with dirty floors, splinters or other foreign material,

and are easily available for inspection, cleaning and oiling. Use of the cradle makes it possible to thoroughly hose down the reamer with a high pressure stream just after it is removed from the well. Particular attention can be paid to the bearings and small teeth of each roller before the drilling mud has a chance to become dry and hard, which would result in a tedious cleaning job.

The reamer in its cradle quickly and safely can be skidded out on the pipe rack walk, and easily loaded on the truck for transportation to the next location.



A skid-mounted cradle protects rollers of this side-wall reamer from floor contact.

4. DRILLING PRACTICE

Rotary Brake Tension Chain Anchored

THE usual method of anchoring the chain used to adjust tension on the rotary brake lever is by nailing one end to the floor, or by setting an eye-bolt directly under the forked end of the lever. Either method leaves the chain, when not in use, directly underfoot, and also subjects the anchor to direct tension at each irregularity in brake drum as it in turn passes under the brake blocks.

By attaching the chain at the center of a short eye-bolt, the bolt affords sufficient spring to accommodate drum irregularities, and maintain uniform tension on the brakes. One end of the eye-bolt is carried in another bolt, set into the derrick floor beyond the normal stand of the driller, with quick clearance of the floor provided by hooking the other end of the chain's eye-bolt under a latch carried at the edge of the draw works housing. To clear the floor of the entire chain, it is necessary only to unhook the free end of the bolt, and swing the entire unit around the eye in the other bolt, at which time the assembly may be dropped through the floor, or stacked ready for reuse.

5. SAFETY

Emergency Shutoff For Steam Line

THE seldom occurring but ever-present possibility of having something foul the steam throttle control or in some other manner make it impossible to shut down the drawworks quickly in an emergency, prompted one drilling contractor to install extra shut-off valve on each of his drilling units to permit more than one man operate the control in case the driller was unable to do so.

A quarter-turn valve was installed in the steam line just ahead of the throttle valve controlling the drawworks engine. It was oriented so that a ¼-inch steel rope could be used to operate it from either of the catheads on each side of the drawworks. A loop fashioned at the end of the cable, held in place with a short length of soft rope, makes the rope easily accessible.

Although it primarily is intended to be of use if a man becomes entangled in the catline, it also proves of value when something breaks or occurs which the driller does not see or is unable to control in time to prevent serious damage.

A chain attached to the center of a short eye-bolt affords sufficient spring to accommodate drum irregularities and to maintain uniform tension on rotary brake lever.

This rope connects to valve in steam line for emergency drawworks shutdown.

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HIGHLIGHTS IN THE WEEK'S NEWS

Washington

TNEC Told Major and Small Groups Both Lobbying

Major and independent oil associations have been equally active in lobbying for and against legislation affecting the industry, it was charged, March 12, in a monograph and economic power and political pressures submitted to the Temporary National Economic Committee by Donald C. Blaisdell, staff economist.

Reviewing the activities of several hundred trade, industrial and financial organizations, Blaisdell named both the American Petroleum Institute and the Independent Petroleum Association of America as engaging in lobbying, commenting with respect to the latter that during the second week of May, 1932, when numerous legislative agents were active in Congress, "the lobbyist of the Independent Petroleum Association of America 'got his tariff in the tax bill.'"

As a means of meeting the problems which lobbying have raised, the report advocated federal registration of all lobbyists and full publicizing of their operations.

Report Both Praises and Condemns Oil Industry

The oil and gas producing industry "has done an excellent job of production" but has not helped to solve the problem of unemployment, the Temporary National Economic Committee was told last week in a monograph on the "social performance of business," prepared by Theodore J. Kreps, professor of business economics at Stanford University.

The production branch of the industry, Kreps declared, "is one in which production has reached levels in recent years from 30 to 40 percent in excess of those in 1927. Yet so great has been the increase in productivity that employment in 1938 was seven percent less than it was in 1927, while pay rolls were nearly 19 percent less."

The monograph pointed out that the industry has been making considerable investment in automatic equipment and the like, supplanting some of the labor that was formerly employed, so that in 1937 "the industry gave 44 percent additional product for only 26 percent additional money."

"In terms of dollars of constant purchasing power, however, the levy upon the consumer pocketbook was no smaller inasmuch as prices have gone down by more than 15 percent from 1927 levels," it continued. "While collecting a larger sum of money from the public, the industry disbursed in 1937 one-sixth less money to laborers in the form of pay rolls than it did in 1927."

Kreps found also that "in few industries has the productivity of labor increased more rapidly in recent years than in the refining of petroleum." However, this branch of the industry has increased employment, by one-sixth, as its output climbed to 50 percent above 1927 levels. "It has also passed on a good deal of the benefits to consumers, particularly in the 'thirties," he commented.

The TNEC this week also received a report from the Federal Trade Commission on natural gas and natural gas pipe lines in which it charged that the oil industry has been guilty of "prodigal wastage" of gas.

"The most important cause of waste of natural gas arises out of the fact that such a large proportion of the total natural gas is produced in connection with the production of crude petroleum, and is due to the fact that neither gas nor crude petroleum can be produced independently of the other," the commission declared.

Another source of wastage of natural gas produced in crude petroleum operations results from the fact that when oil men drill wells high on the producing structure and get only gas, "the practice is frequently followed of permitting wells to blow freely to the air in the hope of causing them to produce oil," it was pointed out. "Large volumes of natural gas have been wasted in this way."

Still another cause of wastage is the completion of oil wells in such manner as to permit the escape of gas from purely gas-producing strata overlying the oil-producing formation to other porous strata, or to the oil-producing stratum where its pressure may be used to lift oil to the surface.

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Legislation

Cole Committee to Study Possible Legislative Need

Oil hearings to start before the Cole subcommittee of the House Interstate and Foreign Commerce Committee on March 25, will go into the possible need for legislation, it was indicated last week by Chairman William P. Cole, Jr.

"The committee will hear testimony bearing upon the vital need of petroleum in the national defense, its importance in commerce and industry, and whether the critical condition in Europe and Asia have presented an urgent need for federal legislation to safeguard our petroleum supply through the prevention of waste, and by the establishment and maintenance of sound, economic conditions in the oil industry as outlined to the committee by a letter under date of November 29, 1939, from President Roosevelt to the committee," Cole said. "The hearings also will cover the southeastern pipe line situation as presented to the committee in a letter of January 23, 1941."

At least a week will be required for reception of testimony which the subcommittee will ask, it was said. Witnesses to be heard will include representatives of the Office of Production Managements, the Secretaries of War, Navy and the Interior, and the railroads pipe line companies and the Interstate Oil Compact Commission.

Announcement of the broad field to be covered at the hearings raised speculation in Washington as to whether the oil industry is not heading into the position occupied by the motion picture industry last session, when it was confronted simultaneously with a major government anti-trust suit and the threat of Congressional legislation.

The suit against the oil industry already has been filed in the District of Columbia federal court, and the desirability of legislation controlling at least the production of petroleum has been submitted to Congress repeatedly in the past by President Roosevelt and Interior Secretary Harold L. Ickes. Also, there are divorce bills pending in both Senate and House, and efforts will be made to secure hearings on them in the near future, probably before the Senate Judiciary Committee.

There are indications that, as in the case of the film industry, the oil industry will avoid legislation by accepting a consent decree in the government suit, reforming its practices to meet the demands of the Department of Justice.

In the case of the movies, a bill definitely outlining practices to be followed in the sale of pictures had passed the Senate and was ready for a favorable report from the same committee that is in charge of oil to a House that was believed ready to pass the measure without difficulty, when the industry accepted a consent decree. On the ground that opportunity should be given to see whether the decree would bring about

the desired improvement in the industry, the legislation was shelved.

Observers in Washington believe that this situation may be repeated with respect to oil, that is, that legislation may be introduced and the industry may make a consent decree settlement of the suit. More than tentative overtures toward settlement of the case have already been made, and there is ground for belief that it will be disposed of without trial.

Georgia to Reconsider Pipe Line Bills after Knox Visit

With echoes of Secretary of the Navy Frank Knox's OK ringing in its ears, the Georgia General Assembly on March 17 will be called upon to reconsider a bill once defeated that sought to give pipe lines the right of eminent domain.

Knox, in an interview with Atlanta newspapermen last Wednesday, not only gave the measure his approval, but said Georgia's Governor Eugene Talmadge has a letter from President Roosevelt concerning urgency of the controversial legislation.

Passing through Atlanta last week en route from Texas to Washington, the Chicago publisher turned naval expert, talked freely with newsmen regarding pipe lines.

"The line from Baton Rouge, Louisiana, to Norfolk, Virginia, is vitally essential to national defense," he said. "One of the most vulnerable points in our whole national defense setup is the transfer of fuel oil along the Gulf Coast, around the Florida peninsula, and up the Atlantic seaboard. Such water transport in time of war would be in grave danger from submarine activity."

Sufficient pipe lines should be run from the oil producing sections to the east to carry at least 20 percent of the supply now carried by tank cars, he said. He believes this amount will be sufficient for national defense needs.

Queried by reporters as to whether President Roosevelt considers the measures of sufficient importance for him to meet a challenge of the Georgia General Assembly to personally back the pipe line bills by wire, Knox declared: "The President already has written a letter to your governor."

If such a letter has been written, however, its contents are a secret known only to the president and Governor Talmadge. When the Senate's general judiciary committee met Thursday afternoon to consider a pipe line statute that would grant the lines the right of eminent domain, the letter noticeably failed to appear. The mere reading of it would undoubtedly have carried the pipe lines' cause.

The pipe line measure which the Senate committee met to consider Thursday, gives pipe lines the right of eminent domain if the President, the Secretary of War, or the Secretary of the Navy considers them vital to national defense.

After listening for 2½ hours to representatives of the Southeastern Pipe Line Company, the bill's proponents, and attorneys for southern railroads, who oppose the project, the committee voted to adjourn the hearing until three o'clock Monday afternoon, when the matter will be considered in executive session. Proponents of the measure waged an unsuccessful fight for immediate consideration.

A substitute bill, introduced to the committee during the hearing, will also be acted upon Monday afternoon. Entered by proponents of the measure, it strikes the name of the Secretary of War and the Secretary of the Navy from the list of those who shall label the project vital to national defense. The name of the Governor of Georgia is added in the substitute measure.

Mention of Knox's name during the hearing brought bitter and caustic comment from opponents of the bill. H. W. Flournoy, who said he represented 21 railroad labor organizations and appeared in opposition, declared:

"You keep mentioning Knox. He is greased from the bottom of his seat to the back of his ears with oil—oil stock."

Flournoy declared organized railway labor is opposed to the measure because "it is detrimental to the employes of the railroads in holding their jobs."

W. L. Stanley, public relations officer for Seaboard Airline Railway, charged the pipe lines are using national defense as a mask "to get a toe-hold in Georgia. They know that when the emergency has passed, they can't be dislodged," he declared.

The railroads can do the job, he told the committee members. "There are in the United States today 147,000 tank cars, and for the last six months, 27,000 of these cars have been idle daily." He charged that gasoline in the pipe lines moves at the rate of only two miles an hour.

"It would take 156 hours to move one gallon of gasoline from Port St. Joe to Chattanooga by pipe line," he declared. "Railroad freight trains travel at the rate of 16.7 miles per hour and could haul the same gallon from Port St. Joe to Chattanooga in 21 hours."

Replying to Stanley, James V. Carmichael, attorney for the pipe line firm, said: "The railroads don't own a tank car. The tank cars are owned by the oil companies and the American Tank Car Company because the railroads refused to supply them."

On the national defense issue, Carmichael told the committee: "The pipe line didn't come to Georgia to build a pipe line for national defense. It came to Georgia to make money, just like the railroads, but that was before hell broke loose in Europe."

Carmichael said more than 400 miles of the pipe line have been virtually completed "at a cost of more than $4,000,000." "It lacks only 21 miles beneath highway and railroad rights of way and could be put into operation within 30 days," he said.

The Baton Rouge-Norfolk line named by Knox was hardly mentioned during the discussion, though presumably it, too, would pass through Georgia. A spokesman for Southeastern Pipe Line Company said plans for the other line are being held in abeyance pending result of the Georgia legislation. Construction has not yet begun, he said. The Southeastern Pipe Line Company project is sponsored by Gulf Refining Company and Wofford Oil Company, and the Baton Rouge project by Shell Oil Company and Standard Oil Company of New Jersey and Kentucky.

An official of Southeastern Pipe Line Company said the two lines "could be linked in the event of an emergency."

Whether or not the measure receives the blessing of the general judiciary committee, it will probably appear on the Senate floor in a minority report. If it passes the Senate, it still must pass the house, which a week ago killed a House bill essentially the same as the Senate measure.

Drastic Texas Bills Pushed Toward Final Approval

At every session of the Texas legislature during the past ten years, oil men have appeared to oppose higher tax rates, urge passage of better conservation laws, or to seek some other proposal which they said affected their industry. Time after time, they have appeared and warned that if this bill passed or another failed, chaos would result in the Texas oil industry. Apparently, they cried "wolf" once too often, for this time the House, at least, has ignored the imminence of chaos, and, if anything, has aided and abetted the oil industry's pet wolf.

Not only drastic tax legislation which was passed last week, but pollution bills which will prove extremely costly, seem set for fair sailing. The pollution bills themselves appear innocent on their face, but an analysis by oil company attorneys indicates that if these bills become law, the industry will have to pay an enormous tribute to a new bureau which may in turn subject them to severe regulation.

Omnibus Tax Bill

In a 14-hour session, the House passed by a vote of 127 to 8 an omnibus tax bill expected to raise about $25,000,000 in new revenues, approximately $15,000,000 of which would be paid directly by the oil industry. Nearly half the remainder, an increase in franchise taxes on capital stocks, will come from large corporations engaged in the oil and gas industry.

While the House ordinarily passes bills calling for high taxes that are, in turn, reduced by the Senate or in free conference committee, the temper of the Senate at this session indicates that it may accept House tax rates as provided in the bill, and in some instances provide for increases.

The bill passed by the House last week begins with a raise on crude oil taxes from 2¾ cents and 2¾ percent (as provided now) to 4½ cents and 4½ percent of the value of crude oil if it exceeds $1 a barrel. It is estimated that this section of the bill would raise $9,000,000. The estimate is sound as the amount of production in the past is well known and the collection system is established.

The tax on sweet gas would be raised from 3 percent of the value at the well head to ¼-cent per 1000 feet. A new sour gas tax would be provided amounting to 1/10-cent per 1000 feet. A new tax on casinghead gas would be 1/10-cent per 1000 feet. It is estimated that these three taxes would increase income by $2,050,000 which may be low. Another gas tax provides for the collection of ¼-cent per 1000 feet for all gas gathered in Texas to be used for light or fuel. This is in addition to the taxes mentioned above, and is supposed to bring in $2,000,000 more.

There is a new tax on condensate production of 1/40-cent per gallon when a mechanical process is required to obtain the product and 1/10-cent a gallon when the product is obtained without any refining process at all. It is estimated that this tax would bring in $350,000. By rewriting the motor fuel tax section of the law, an estimated additional $1,000,000 would be obtained through better enforcement.

The rate of franchise taxes now is a minimum of $10 annually for a corpo-

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rate franchise up to $10,000; 50 cents per thousand up to $1,000,000, and 30 cents per thousand thereafter. The new bill provides a flat rate of $1.00 per thousand, and it is believed that this will raise a total of $4,500,000.

There are three bills affecting pollution of streams by introduction of salt water from oil wells and other pollutants. As an example of the severity of this measure, the statutes now permit 2000 parts per million, but the new bill, which has been approved by a House committee, provides for only 250 parts per million, or one-eighth of the volume permitted under the statute now.

Under provisions of the bill, the legislature would recognize that conditions are not uniform throughout the state, and the department would be empowered to issue separate rules and regulations similar to those now issued by the Texas Railroad Commission, in that they would assume the status of law, and oil companies and other businesses subject to the act could be penalized heavily for failure to comply with the regulations. The bill would permit an operator to be charged with polluting a stream, and leave it up to him to prove he was not guilty.

Another bill, to come up for hearing on March 17, would turn over to the Public Health Department, under the guise of sanitary districts, all sewage disposal systems and salt water disposal systems. Salt water disposal wells drilled in the East Texas oil field by private companies could be governed by the department. In addition, the bill authorizes establishment of certain sanitary districts which would have the power to levy additional taxes for their support and for the support of any sanitary program that the particular district might think wise to institute.

A zealous public health bureau might raise unlimited funds in this manner, taxing oil companies and other industries in the area for the services it proposes to render. Because the money would be used in the interest of public health, it would be difficult to oppose such a campaign once the bills became law. Because of the scope of the operations, an endless number of bureaucrats could be added to the public payrolls, and once established, it would be virtually impossible to unseat them.

At a hearing March 20, the House committee on oil, gas and mining will take up three bills designed to provide for the proration of distillate and condensate. The law now does not permit proration of these products, and some crude producers have long resented this exemption. Since a large part of the production results directly from operation of recycling plants designed to conserve oil and gas, as well as to aid in production, opponents of the bills believe that they have an excellent position and will be able to defeat the program.

The House committee on oil, gas and mining reported favorably a bill to amend the marginal well law. Under the law now, marginal wells must use pumping equipment under an interpretation made by most attorneys. Under the new bill, if the well was operated with gas lift or by any other artificial means, it could still be a marginal well.

The Senate has set for hearing on March 24 a bill providing for proration of distillate and condensate. It is a companion bill to the one set for hearing in the House.

In a surprise move before a House committee last week, Railroad Commissioner Jerry Sadler appeared to voice approval of a bill to forbid a state office holder from running for another office before the end of his term. The bill was approved by the committee.

While the state-wide proration hearing is in progress next Monday, proponents of a bill to create a new oil and gas commission plan to bring the bill out on the floor of the House for final passage. Numerous amendments will be offered to the measure, and oil men who attend the hearing will be able to attend the legislative session.

BRUCE ROBINSON

New Officers Named to Pacific Coast A.P.I.

New officers of the Pacific Coast District, American Petroleum Institute's Division of Production, named at Los Angeles, March 11, are:

Chairman: Bruce Robinson, General Petroleum Corporation of California;

Vice Chairman for Los Angeles Basin: E. L. Davis, The Texas Company;

Vice Chairman for Coastal Area: R. W. Borden, Barnsdall Oil Company;

Vice Chairman for San Joaquin Valley Area: Paul Lehr, Shell Oil Company;

Secretary: D. S. Kilgour, California Oil & Gas Association, and

Treasurer: W. G. Corey, Pacific Gear & Tool Works.

Associations

Pacific Coast A.P.I. Has Five-Paper Program

Bruce Robinson, General Petroleum Corporation of California, Los Angeles, last week was elected chairman of the Pacific Coast District, American Petroleum Institute's Division of Production, during the organization's annual spring meeting held in Los Angeles. Attendance at the evening session of the one-day meeting reached 1000.

Robinson attended school at the University of New Mexico and the United States Naval Academy. He entered the oil industry by painting tanks in Oklahoma in 1923, and during the past 16 years has been with General Petroleum Corporation of California, currently as superintendent of drilling and producing operations in the Los Angeles area.

Employer-Employe Relations

Arthur J. Young, visiting lecturer in industrial relations at California Institute of Technology, speaking at the evening dinner meeting, stressed changes that have taken place in relationship between employe and employer over the past few years with the rise of trade unionism. He suggested that employers should work out their labor problems with union representatives in a cooperative spirit, declaring much could be gained by cooperative action. The majority of workers, he said, feel that their salvation rests with unionization, and this definite trend must be recognized.

R. N. McMasters, Chanslor-Canfield, Midway Oil Company, retiring district chairman, was named chairman of the district's advisory committee. Members of the advisory group include: L. L. Aubert, A. H. Bell, L. A. Cranson, J. S. Dodge, E. G. Taylord, E. B. Hall, W. L. Heater, R. P. Huggins, Joseph Jensen, William Keck, Jr., R. L. Keyes, W. N. Lacey, M. A. Machris, R. D. Montgomery, R. C. Paterson, Ben Parsons, H. C. Pyle, E. E. Pyles, J. D. Southerland, C. P. Watson, H. T. Wyatt, and W. C. Whaley.

Five technical papers were presented during the morning and afternoon technical sessions. Approximately 900 were in attendance at the technical meetings.

Abstracts of technical papers follow:

Vocational Training is Oil and Gas Production

By W. L. Bagby
Shell Oil Company

Vocational training has been insufficiently elastic to meet the rapid technologic advance taking place in the petroleum industry—a situation aggravated by curtailed personnel resultant of current economic conditions.

The Smith-Hughes Act of 1917 made federal aid available for industrial employe vocational training with public school cooperation under state supervision. In 1932, the petroleum industry gave the project support through the American Petroleum Institute, and in 1933 through its central committee began sponsoring classes in several states, including California. Courses relating to the production phase of the petroleum industry have been designed to give training in drilling, production, natural

Actual time records and cost figures on numerous deep-well drilling operations have more than born out our expectations and those of the prominent oil men who cooperated with us in developing HEWITT Multiple-Length Rotary Hose. These records have proved that the use of a divided-length unit does cut inventory standby and replacement costs—that replacement involves only half the usual length, and half the usual cost. They've proved that the special built-in coupling is leak-proof and non-wearing—that it does provide full flow. And every experience shows that Multiple-Length is an easy-handling hose with more than ample safety margins—that it is non-writhing even under the hammering of peak pressures. Check your HEWITT distributor on these oil field results—ask him for details. He's listed in Classified Telephone Directories of major drilling centers. Hewitt Rubber Corporation, Buffalo, N. Y.

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W. L. Bagby

gas production and processing, and pipe line transportation.

A total of 27,512 men employed in the petroleum industry have availed themselves of vocational training in California since inception. Absence of statistics regarding the enrollees' subsequent welfare precludes precise judgment as to the efficiency of the program. However, the interest shown and advancement of men so trained gives incontrovertible testimony to its success. Much credit is due the API Subcommittee for Topical Vocational Training, which in the main has shouldered the industry's responsibility. The evidence points clearly to the need for continued support on the part of the industry to the end that there will be greater impetus for progress and efficiency.

Recent Equipment for Paraffin Removal, Perforation Cleaning and Well Completion

By Benton Turner
Drilling and Exploration Company

Four new tools have been selected as those which offer the greatest promise of improving production technique and reducing operating costs. They are:

Benton Turner

1. An electric heating process for intermittently removing paraffin accumulations from the tubing of pumping wells. Basically, the method supplies heat to melt the paraffin in the tubing by passing a direct current through the tubing and rods and using them as elements of a resistance heater. The tubing is insulated from the tubing head and casing by special insulators. At a point in the well below which paraffin is known to form, contact is made between the tubing and casing to complete the circuit to the surface. Heat is generated in the tubing and rods rather than in the casing because the former have a smaller metal area with a consequent higher resistance. Current is supplied at the surface by a direct current generator mounted on a truck. Contact is made to the well by removable cables.

2. A perforation washer that enables the operator to check each individual shot hole or ring of perforations around the pipe, regardless of the vertical distance between perforation centers, and apply a hydrostatic pressure of sufficient force to open those which are clogged. Further it offers a method of injecting chemical that has not been hitherto mixed with the fluid in the well through the perforations. The washer is essentially a reciprocating pump run into the well on the bottom of the tubing or drill pipe. Its principal parts consist of pump assembly, drive down spear, and packer assembly. The packer assembly and pump are connected by a hollow piston rod that allows the fluid to pass from the working barrel of the pump through the piston rod and out between the packer rubbers which isolate the perforations for testing and washing. The packer assembly travels down the hole a distance equal to the stroke of the piston, a feature that permits the operator to set the packer rubbers any required distance apart so that each ring of slots or shot holes may be individually tested.

3. A well cleaning process, the intent of which is to deliver without damage to the perforated liner in the well a low velocity concussion wave of sufficient force to clean the liner perforations and flush the surrounding formation. To generate this force, a torpedo filled with an explosive mixture of compounded gases is lowered into the well on the sand line. When opposite the perforated section to be cleaned, the torpedo is detonated by means of a go-devil dropped from the surface and securely mounted around the sand line.

4. A gun tester combination tool consisting of a pressure bomb, gun perforator and casing packer. Combining these three tools into a single tool offers the following advantages: A considerable amount of time is saved over the conventional method of gun perforating and testing, and the perforations are not exposed to the weight of the mud column for any appreciable length of time before testing. Ninety-one successful jobs in the Gulf Coast area have been completed with the gun tester. A maximum of 90 shots has been fired on one test. The maximum depth to which the tool has been run is 10,060 feet, and to date no fishing jobs have resulted from its use.

Voluntary Curtailment Program of California Oil Producers

By A. H. Bell
Conservation Committee of California Oil Producers

Starting with the development of voluntary curtailment of production in California in 1922, which forced temporary curtailment at Santa Fe Springs and other flush fields in the Los Angeles Basin and heavy oil fields in the San Joaquin Valley, a full history of the program was traced.

A. H. Bell

A summary of the "uniform formula" system of prorating oil production was also given. Objectives sought under the formula are listed as: first, a minimum allotment for every well which increases with well depth; second, a proportion of the potential remaining after deducting the minimum allotment, which is based on a graduated power factor curve giving smaller percentages to the larger wells, and third, an arbitrary top allotment for any well regardless of allotment calculated under the two preceding steps.

The author stated: "The scarcity of new field discoveries in the last two years indicate that the future outlook for California producers is more favorable than it has been for some time. . . . When one considers the pressure that is being brought for some sort of statutory control, either federal or state, it is evident that voluntary curtailment is on trial and must make good through full compliance or revert to danger of 'dictatorship' through law, or 'survival of the fittest' through abandonment of any control."

Recently Developed Methods for the Inspection of Tubular Goods and Sucker Rods

By H. M. Henderson
Standard Oil Company of California

The constantly decreasing profits obtained from the production of oil has encouraged development of new equipment to help maintain these profits by further reducing the cost of production.

Material costs constitute one of the main items of production expense and it was mainly in regard to reduction of material costs that the development of special equipment has been realized with which to determine the extent of damage to tubular goods through service. Reduction in quantity of material required by the industry is doubly important at this time for in addition to reduction of production expense, it also releases material and manufacturing facilities to our constantly expanding defense program.

Equipment now is available to survey tubing either on the rack or in the well.

Worn sucker rod couplings are readily detected when the string is pulled and are replaced as the situation requires. Worn joints of tubing are also replaced at times before actual failure occurs, but the detection of worn points is not so easy and a knowledge of the extent of the wear is not so apparent to the well crew as in the case of the sucker rods, for it is impossible to determine the amount of the wear and in many cases to even detect the existence of it without special instruments.

Saving by Inspection

Using newly developed equipment, a survey was conducted at a well which had caused much trouble from tubing leaks and where it had been decided to replace the string with a new one. The survey found that 106 out of 152 joints had a remaining wall of more than ⅛ inch, and could be rerun safely while the joints with less remaining wall were replaced with new material. Considerable saving was thus accomplished, and a definite knowledge of the existing situation was obtained.

A survey conducted on a rack full of tubing which had been segregated by visual inspection indicated that much good pipe had been segregated as scrap, and considerable scrap pipe had been classed as good, indicating that purely visual inspection of worn tubing would probably lead to much expense and trouble due to the improper classification and use.

Oil well sucker rods constitute one of the major items in the maintenance of a pumping well. Sucker rods are subjected to severe service, and until recently there has been no means of determining where a probable failure was liable to occur, hence there was no opportunity to remove the defective rod before failure actually occurred.

Recently, equipment has been developed for surveying a string of rods as the rods are being pulled from the well, and, from the records drawn on the strip chart by the recording instrument, to classify the rods according to the amount of working that the steel has undergone. From the information thus obtained, rods classified as poor are removed from service or relocated at a point of lower loading in the string.

In the past, the decision as to when a string of pipe should be retired from drilling service and converted into line pipe was reached when a number of failures had occurred in the string, and when it was felt that the string had been used

sufficiently to have served its normal life. Having had no means of segregating the good joints remaining in the string from the ones which were liable to cause early failure, the entire string was usually retired at the same time.

It is quite evident that this is not economical practice, but until some practical method was developed to segregate the good pipe from the defective, there was no safe alternative.

Some Factors Which Influence the Choice of Drilling Equipment

By Victor J. Beissinger

Richfield Oil Corporation

Rather than to attempt a detailed survey of all factors which might influence selection of individual units of drilling equipment, this paper is concerned primarily with an exposition of the major factors which govern the choice of whole drilling outfits. The mechanics and economy of drilling operations are affected by such factors as program, power and cost.

Fundamentally, cost relationships and effects are truly realistic, and the most advantageous choice of drilling equipment may be substantiated by the cost of its ultimate performance. In order to obtain conclusive regional expression for the most basic cost determinations, the writer has suggested what he believes to be a practical scheme to pool individual company drilling experience records. Only by such a coordination of effort can we secure full information in the light of full perspective.

Four general conclusions can be pointed to as noteworthy memoranda pertinent to the choice of drilling equipment:

1—There need be no specific distinction between development and wildcat drilling outfits.

2—The use of combination dual-power rotary rigs may be anticipated for the most convenient handling of widely variant drilling jobs.

3—Cost data resolved on the basis of indicated work accumulation can be used to estimate the probable future worth of drilling equipment purchases.

4—The purchase of drilling equipment can be justified economically only over a considerable period of active use. Drilling department organizations of so-called integrated companies might secure such an economy by following the pattern of contract drilling work. The design for profitable drilling is fundamental for contractors. It should be equally attractive to other operators.

A. P. I. Mid-Continent District, Division of Production, Program

NATIONAL defense, state regulation and personnel relations will be discussed during a general session at the spring meeting of the Mid-Continent District, American Petroleum Institute's Division of Production, to be held Friday and Saturday, March 21-22, at Amarillo, Texas.

H. M. Stalcup, vice president of Skelly Oil Company, Tulsa, will discuss "The Oil Industry and Preparedness"; Andrew F. Schoeppel, chairman of the Kansas Corporation Commission, Topeka, will speak on "State Regulation of the Oil Industry," and J. H. Mitchell, The Carter Oil Company, Tulsa, will speak on "Personnel Relations in the Oil Industry."

Entertainment features include a dance and floor show Friday evening, starting at 9:30 p.m. A table d'hote dinner is being arranged for those desiring it, starting at 7 p.m. A stag banquet and show have been scheduled for Saturday evening, the banquet for 7 p.m. at the hotel, and the show at 8:45 at the municipal auditorium.

The complete program follows:

FRIDAY MORNING, MARCH 21

Presiding:
D. R. Knowlton, Phillips Petroleum Company, Bartlesville, and H. E. Miller, Lario Oil & Gas Company, Wichita.

Opening Remarks:
Tom J. Hamilton, Mid-Continent Pump Supply Corporation, Oklahoma City, district chairman.

Secondary Recovery in the Rocky Mountain Region:
C. F. Barb, Colorado School of Mines, Golden.

Water-Flooding in Oklahoma:
L. M. Arnold, Geologic Standards Company, Tulsa.

Water-Flooding in Kansas:
R. C. Earlougher, Geologic Standards Company, Tulsa.

Gas Repressuring in Kansas:
L. L. McWilliams, Phillips Petroleum Company, Bartlesville.

FRIDAY AFTERNOON, MARCH 21

Presiding:
T. C. Johnson, Wichita, and R. S. Knappen, Gulf Oil Corporation, Tulsa.

The Oil Industry and Preparedness:
H. M. Stalcup, vice president, Skelly Oil Company, Tulsa.

State Regulation of the Oil Industry:
Andrew F. Schoeppel, chairman, Kansas Corporation Commission, Topeka.

Personnel Relations in the Oil Industry:
J. H. Mitchell, The Carter Oil Company, Tulsa.

Symposium on Two-Zone Oil Well Completions:
A. S. Ritchie, McPherson Drilling Company, Wichita, chairman, and E. O. Bennett, Continental Oil Company, Ponca City, vice chairman.

FRIDAY EVENING, MARCH 21

Dance and Floor Show:
The Nat.

SATURDAY MORNING, MARCH 22

Presiding:
Tom J. Hamilton, and George Berlin, Skelly Oil Company, Pampa, Texas.

Care and Maintenance of Diesel Engines:
T. M. Fahnestock, Caterpillar Tractor Company, Peoria, Illinois. Introductory remarks on multi-cylinder engines by George P. Fenn, Caterpillar Tractor Company, Peoria.

The Application of Gas Lift of Modern Production Methods:
E. D. Wilde, The Guiberson Corporation, Dallas.

Gas Well Acidizing in the Texas Panhandle:
Gilbert L. Leach, Dowell Incorporated, Tulsa.

Determining Potentials by Draw-down Methods
Charles C. Rodd, Gulf Oil Corporation, Chase, Kansas.

Chapter Activities:
District Officers.

Election of Officers and Advisory Committee.

SATURDAY AFTERNOON, MARCH 22

Presiding:
R. C. Kay, Amarillo, and H. E. Zoller, Derby Oil Company, Wichita.

Oil Well Cementing Practice in Kansas:
George T. Hoisington, Halliburton Oil Well Company, Wichita.

Gel-Cements and Their Application in Oil-Well Cementing Operations:
Cedric Willson, Trinity Portland Cement Company, Houston.

Mud Control As an Aid in Mid-Continent Drilling:
E. R. Albert, Jr., Baroid Sales Division, Tulsa.

Installation and Maintenance of Oil Field Tanks:
G. Raymond, Black, Sivalls & Bryson, Inc., Oklahoma City.

SATURDAY EVENING, MARCH 22

Stag Banquet:
Herring Hotel.

Stag Show:
Municipal Auditorium.

Officers of A.P.I. Mid-Continent District, Division of Production

T. J. Hamilton
Chairman

H. E. Miller
Vice Chairman

R. S. Knappen
Vice Chairman

George Berlin
Vice Chairman

H. R. Goodpaster
Secretary-Treasurer

Gasoline Prices Improve; Crude Oil Markets Firm

Gradual strengthening of the industry's market situation was further evidenced last week by additional advances of prices for gasoline and lubricants and by reports of purchases of gasoline by some refiners to augment their own production in covering contract obligations.

California Crude Prices Revised

In line with the strong markets for fuel oils east of the Rockies, as well as in reflection of good demand for those products on the Pacific Coast, posted prices for heavier crude oils were advanced 5 cents a barrel March 12 in the San Joaquin Valley fields and the Elwood field (Coastal district), California, although at the same time lighter crudes were reduced by amounts ranging to 10 cents. The minimum price for heavy crudes now is 65 cents a barrel, and the top price for the light crudes is $1.19.

The revision in California was initiated by Standard Oil Company of California, and the explanation was made that the change was in accordance with the trends of current demand for the various grades of crude oil involved.

The San Joaquin Valley fields affected by the revision included Newhall, Kern River, Kern Front, McKittrick, Round Mountain, Greeley, Canal, Wasco, Cole's Levee, Mountain View, Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview, Lost Hills, Coalinga, Wheeler Ridge, Kettleman Hills and Elwood Terrace.

Although the revisions were limited to the above mentioned areas, it was expected that additional adjustments might be made in the near future, affecting fields of the Los Angeles Basin. Some speculation was offered, moreover, that crude prices might be increased throughout the state with exception of gravities in the top brackets. It was generally agreed that an adjustment as between light and heavy oils was warranted, and there was some anticipation that the March 12 revision would be followed by a general upward adjustment in all gravities except those above 30.

Crude oil markets outside of California are generally firm, as production conforms approximately with market requirements, under March allowables; while good demand for most products is promoting improvement of prices that can be realized from the derivatives of crude.

The most recent crude price change in the Rocky Mountain region was a 5-cent increase made by The Ohio Oil Company March 1 in the posting for the black crude oil of the Oregon Basin field, Park County, northern Wyoming.

Although wholesale and retail prices of gasoline so far have advanced only moderately from the low levels to which they were depressed in 1940, there has been in recent weeks a pronounced improvment of the market for that product, and continued betterment is generally anticipated.

It is indicated that present stocks of gasoline are fairly moderate in relation to current and prospective demand, being several millions of barrels smaller than at this time last year, while market requirements are substantially larger. (Some estimates indicate that total demand for gasoline has been around 10 percent greater so far this year than in the corresponding period last year, despite a further loss of export business; domestic consumption being apparently at a surprisingly high level.)

Only a relatively small addition to gasoline stocks occurred in the week ended March 8. The 261,000-barrel increment compared with one of approximately 1,000,000 barrels in the corresponding week last year. Total stocks on hand at the close of the week (97,178,000 barrels) was 3,000,000 barrels less than those held a year previously. Furthermore, the present inventory includes about 2,500,000 barrels more aviation gasoline than did that of a year ago. Consequently, the present stock of regular gasoline is about 5,500,000 barrels smaller than the quantity in storage at this time last year.

Quotations Advanced

For several weeks, the market for gasoline has ben exceptionally strong on the Gulf Coast and along the Atlantic seaboard, and prices showed further improvement last week in both of those areas. In some instances, refiners of the Gulf Coast late last week were quoting prices ⅛ to ¼ cent a gallon higher than a week before on all grades.

In the Mid-Continent, too, there was definite strength in the gasoline market, as some plant owners encountered more demand than they could undertake to supply. Contracts were renewed by some refiners, covering business a month ahead, only at prices ⅛ cent a gallon, or more, higher. Meanwhile, various refiners were behind with shipments of previously sold gasoline.

In reflection of the higher prices in the primary markets of the Southwest, and also because of slightly advancing tanker rates betwen the Gulf Coast and the North Atlantic Coast, prices of gasoline moved upward also in New England and New York state. Minimum quotations of Boston suppliers were up ¼ cent a gallon from a week previously, as were top prices asked in New York.

Socony-Vacuum Oil Company, effective March 12, increased by 3/10 to 4/10 cent per gallon its tank car prices of regular grade gasoline in New England and New York state. Dealer tank wagon and commercial consumer prices at the same time were adjusted accordingly.

Markets for heavy fuel oils doubtless will continue strong, as factories, mills, mines, smelters, railroads, electric power plants, shipping lines and other users may be expected to consume all available supplies, including those imported,

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[5]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[3]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[1]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 1	3,590,150	3,680,000	261,208,000	90,864,000	37,634,000	100,428,000
February 8	3,617,650	3,640,000	260,250,000	93,265,000	36,709,000	99,921,000
February 15	3,638,100	3,630,000	260,948,000	94,741,000	35,758,000	99,425,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 1	3,632,250	3,585,000	263,176,000	96,917,000	33,725,000	97,510,000
March 8, 1941	3,633,450	3,505,000	.....	97,178,000	32,429,000	97,372,000
March 8, 1940	3,828,550	[8]3,551,000	[4]244,126,000	100,292,000	24,289,000	103,112,000
Change in past year	—5.1%	—1.3%	+7.8%	—3.1%	+33.5%	—5.6%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, March 2, 1940.
[5] Lowest since October, 1922, due to shut down of six mid-continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] March, 1940, daily average.

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The inside diameter is only half the size of the drill pipe on which it is used and the tremendous gripping power, larger wall thickness, and greater protection afforded are immediately apparent.

Grizzly "Hug-Tite" Protectors and Stabilizers *are hydraulically installed by an entirely new method.* This in turn *permits using a firmer and tougher rubber,* insuring protectors that can take all the abuse encountered on the toughest drilling jobs and give 100% protection all the way to bottom in well after well.

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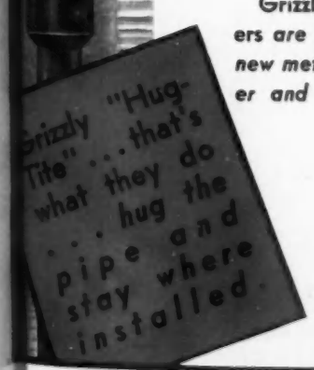

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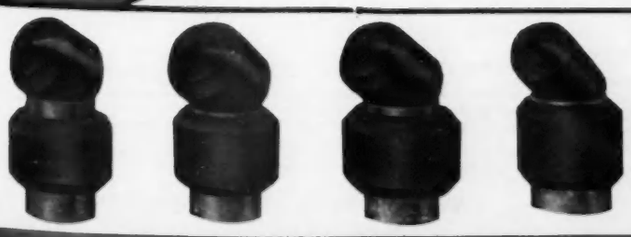
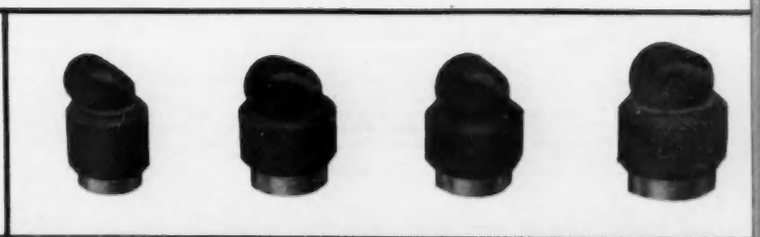


STABILIZERS



PROTECTORS

Note the extremely small inside diameter of each size before installation.

Wholesale Prices of Refined Products in Principal Markets

	Range Last week (Cents a gal.)		Changes from week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and under	3¾	4¼	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
Mid-Western Tank Car:				
60 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
New York Harbor:				
68-70 Octane	5½	5½	...	...
72-74 Octane	5½	7⅛	...	+¼
Gulf Coast:				
60 Octane unleaded	4⅛	4¼	+⅛	+⅛
65 Octane unleaded	4¼	4⅜	+¼	+⅛
72-74 Octane leaded	4½	5¼	+¼	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	2¾	2¾	...	...
F.O.B. Breckenridge, Tex.	2¼	2¼	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4	4¼	...	...
42-44 water white	4¼	4⅜	...	...
Mid-Western Tank Car:				
41-43 water white	4⅛	4¼	...	...
42-44 water white	4¼	4⅜	...	...
New York Harbor	4⅜	4⅜	—⅛	—⅛
RANGE OIL				
At Oklahoma Refineries	3⅞	4⅛	...	...
In Mid-Western Market, Group 3, basis	3⅞	3⅞	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3⅝	3¾	...	...
No. 3	3¼	3⅜	...	...
Mid-Western Tank Car:				
No. 1 white	3¾	4	...	...
No. 3	3¼	3⅜	...	—⅛
New York Harbor:				
No. 1	4⅞	4⅞	...	...
No. 2	4	4	...	...

	Range Last week (Per Bbl.)		Changes from week Before	
HEAVY FUEL OILS				
Oklahoma Refineries:				
No. 6	$0.65	$0.65	...	...
Mid-Western Tank Car:				
No. 5	.75	.85	...	...
No. 6	.55	.60	...	...
New York Harbor:				
No. 5	1.55	1.55	...	...
No. 6	1.25	1.25	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$ .80	$ .85	...	...
New York Harbor	1.25	1.25	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.35	$1.50	...	...
New York Harbor	1.65	1.65	...	—.05
Los Angeles Basin, 27 gravity	1.20	1.26	...	...
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	13	15½	...	...
Neutral oil, pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	8	10¼	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	14	14½	...	...
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	20	20	+1	...

as well as those produced by refineries within the United States.

Stocks of residual fuel oil were further drawn upon, although not to a serious extent, in the week ended March 8, having come down to 97,372,000 barrels from 97,510,000. The new total was about 6,000,000 barrels, or 5.6 percent, smaller than that of 103,112,000 barrels on hand at the corresponding time last year.

Although prices of light fuel oils and kerosene have weakened in recent weeks, in reflection of the approach of the close of the heating season, the market situation for those products has been satisfactory. Last week, demand was temporarily stimulated by colder weather, and prices stiffened.

Stocks came down in the week ended March 8 from 33,725,000 to 32,429,000 barrels, a relatively large withdrawal, although the remaining inventory was 8,000,000 barrels, or 33 percent, larger than that held a year previously.

The comparatively large stocks of heating oils this winter have been good insurance against severe weather, although the winter actually was comparatively mild; and any apparent surplus now on hand likely will be advantageous in taking care of demand next fall and winter. Heating oil consumption is steadily growing every year, and there is very little danger of overproducing that product on a long-term basis. On the contrary, the industry must be on guard against allowing stocks of the light oils to go too low, for when they become inadequate, it becomes necessary to process on an emergency basis

Crude Production Near Demand Despite Increase

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable (Barrels Daily in Mar.)	BARRELS DAILY FOR WEEK ENDED Mar. 8	Mar. 15
TEXAS—				
Texas Panhandle	.....	.....	72,300	67,800
North Texas	.....	.....	100,800	101,600
West Central Texas	.....	.....	29,700	29,900
West Texas	.....	.....	237,200	238,700
East Central Texas	.....	.....	71,600	75,800
East Texas Field	.....	.....	374,500	374,500
South Texas	.....	.....	206,100	212,500
Texas Gulf Coast	.....	.....	255,500	255,400
Total Texas	1,327,400	1,305,152§	1,347,700	1,356,200
CALIFORNIA—				
Long Beach	.....	.....	41,800	42,100
Midway-Sunset	.....	.....	51,300	55,300
Kettleman Hills	.....	.....	36,800	38,700
Wilmington	.....	.....	81,900	82,700
Others	.....	.....	389,700	406,300
Total California	596,400	571,500*	601,500	625,100
OKLAHOMA—				
Oklahoma City	.....	.....	95,050	83,250
Seminole Area	.....	.....	101,375	103,500
Others	.....	.....	206,425	211,925
Total Oklahoma	437,400	400,000	402,850	398,675
ILLINOIS—				
Salem	.....	.....	105,700	104,100
Louden	.....	.....	65,000	66,200
Centralia	.....	.....	13,200	13,100
Other New Pools	.....	.....	130,900	131,200
Old Pools	.....	.....	10,800	10,700
Total Illinois	335,200	.....	325,600	325,300

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable (Barrels Daily in Mar.)	BARRELS DAILY FOR WEEK ENDED Mar. 8	Mar. 15
LOUISIANA—				
North Louisiana	.....	.....	70,200	69,600
South Louisiana	.....	.....	225,800	228,700
Total Louisiana	291,300	306,190	296,000	298,300
KANSAS	198,200	194,200	191,500	206,450
NEW MEXICO	103,900	110,000	107,100	106,500
EASTERN STATES:				
Pennsylvania Grade	48,100	.....	72,100	67,500
Others, Eastern	48,400	.....	20,100	20,200
Total Eastern States	96,500	.....	92,200	87,700
MOUNTAIN STATES—				
Wyoming	83,900	.....	80,500	82,500
Montana	21,900	.....	18,600	18,500
Colorado	3,900	.....	3,700	3,800
Total Mountain States	109,700	.....	102,800	104,800
MICHIGAN	47,700	39,000†	40,000	39,900
INDIANA	22,600	.....	20,600	19,500
ARKANSAS	69,700	69,569	70,100	70,600
MISSISSIPPI	20,300	.....	20,500	20,300
NEBRASKA	3,200	.....	4,000	4,200
‡Total 8 Prorated States	3,068,000	2,995,611	3,056,750	3,101,725
Total United States	3,655,500	.....	3,622,450	3,663,525

* Recommendation of Conservation Committee of California Oil Producers.
† Estimate of actual production under prescribed regulations, which do not fix a definite state total allowable.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.
§ Texas Railroad Commission's estimate of actual net daily production allowing for usual under-production of 3½ percent under net allowable, which for March is calculated at 1,352,489 barrels daily. However, allowable normally increases as new wells are completed. Under February-March order, most Texas fields were ordered shut down March 2, 8, 9, 16, 22, 23, 29, 30 and 31. Texas Panhandle was ordered shut down March 2, 9, 16, 23 and 31.

more crude than needed in taking care of consumption of gasoline.

Markets for lubricants continued firm and promised to improve further, as increased industrial demand in the United States is tending to compensate for lost export markets.

The relatively favorable statistics on stocks of the principal refined products as of March 8, given above, reflected moderate crude runs to refinery stills during the week ending on that date. In that period, plant throughput was estimated by the American Petroleum Institute as averaging 3,505,000 barrels daily, compared with 3,585,000 barrels the week before, and with 3,551,000 barrels daily in the whole month of March last year.

January Production Increases Slightly Over Previous Months

Crude production in January increased only slightly over the two preceding months, the daily average of 3,569,300 barrels being 4100 barrels above the December figure and 5800 barrels above November, it was reported March 13 by the United States Bureau of Mines.

Compared with the initial month in 1940, the bureau stated, the average showed a decrease of 80,400 barrels from the 3,649,700 barrels a day then reported.

Few changes of any importance were shown in the output of the several states, it was said. Small gains were recorded in California, Kansas and New Mexico, and small decreases in Oklahoma, Illinois and Louisiana. In Texas, daily production dropped about 12,000 barrels from December, all attributable to the Panhandle, where production was off about 20 percent.

Increased runs to stills outweighed a further decline in exports of crude to 1,687,000 barrels, the lowest since November, 1932, the report showed. Imports of oil declined materially, dropping to 2,712,000 barrels from 4,673,000 in December, and as a result of these changes in supply and demand the trend of crude-oil stocks was reversed, a reduction of about 800,000 barrels being recorded.

The bureau reported that the yield of gasoline continued its decline in favor of distillate fuel oil, dropping from 43.1 percent in December to 42.8 percent in January as the distillate yield increased from 15.1 to 15.4 percent.

"The domestic demand for motor fuel in January exceeded expectations and amounted to 45,344,000 barrels, or 12 percent above a year ago," the report stated, in a review of the situation. "Exports of motor fuel of 2,045,000 barrels were also larger than anticipated, but somewhat under last year's total. Stocks of finished and unfinished gasoline increased nearly 6,000,000 barrels during the month to a total of just over 90,000,000 barrels on January 31. This is about 600,000 barrels less than on hand a year ago and, excluding aviation-gasoline stocks, about 3,250,000 barrels less.

"The comparatively mild weather of this January was reflected in the distillate fuel demand, which was seven percent lower than a year ago. On the other hand, the residual fuel demand was three percent higher. The domestic demand for lubricating oil recorded a marked increase, being 15 percent above a year ago."

Production of aviation gasoline increased from a total of 1,312,000 barrels in December to 1,566,000 barrels in January, the bureau disclosed. Transfers to regular gasoline also increased, from 270,000 to 322,000 barrels, and domestic demand increased from 509,000 to 563,000 barrels, but exports declined from 497,000 to 440,000 barrels, the latter including 298,000 barrels of anti-knock compounds. Stocks increased sharply, from 6,354,000 to 6,595,000 barrels.

Bureau of Labor Statistics charts showed the price index for petroleum products in January as 50, compared with 49.5 in December and 51.7 in January of last year. The crude-oil capacity represented in the report was 4,325,000 barrels, giving an operating ratio of 83 percent, compared with 82 percent in December and 81 percent in January, 1940.

World-Wide Developments

Germany Is Depending More On Rumania for Oil Supply

Between the lines of a press dispatch from Bucharest last week can be read the story of an increasing dependence of Germany on Rumania's oil supply, a story of greater concentration of petroleum stocks in Western Europe, and a drastic curtailment of Rumania's domestic consumption.

The press dispatch said that present shipments of "1300 carloads" of oil per day to Germany from Rumania would be stepped up to 2000 carloads per day and that 14 German "technical experts" were being sent to Rumania where plans call for the drilling of 150 wells in 1941.

Inasmuch as a "carload" is ordinarily taken to mean 10 metric tons, or approximately 65 barrels (although actually Rumanian tank cars range in capacity from 81 barrels to 135 barrels) this would mean that Germany now is taking about 84,500 barrels per day of Rumanian oil, whereas around the first of the year the German "take" was about 60,000 barrels per day.

Rumania's production then was placed at approximately 100,000 barrels per day with domestic consumption running about 39,000 barrels per day, Germany getting the balance of 61,000 barrels per day. It is considered unlikely that Germany has, in such a short time, been able to extend the production in Rumania, and that the increase in German withdrawals has come largely at the expense of Rumania's domestic consumption.

Construction of pipe lines from Rumania's oil centers to a point on the Danube beyond or near the Iron Gates will materially speed up the movement of oil into Germany. At low water on the Danube movement of barges or tankers is materially slowed down through the necessity of going through locks. This will be in large part obviated by the new pipe lines, as most of the oil to Germany has been moving by way of the Danube. Acquisition of most of Continental Europe's tank cars by the Germans, and completion of the pipe lines to the Danube, as mentioned in a paper before the recent A.I.M.E. meeting in New York, forecast the likelihood of increases in German withdrawal of Rumanian oil.

A short time ago Germany was taking principally diesel oil and kerosene from Rumania. No information is available as to the types being taken out now.

Unquestionably the news dispatch points to the increasing importance of the Rumanian oil supply to Germany, and at the same time adds to the importance which will result from English bombing of such supplies. Up to Friday of the past week the English had not bombed the Rumanian oil centers. People acquainted with the situation in Rumania, however, have expressed the belief that English bombing of Rumanian refineries and tank farms will be far more effective than the bombing of synthetic oil plants in Germany because the location of every refinery and every oil tank is known to the foot.

Unlimited Licenses Issued For Oil Exports to Britain

Unlimited licenses for the export of aviation motor fuel and lubricating oil to various countries of the British Empire were authorized March 12 by Brigadier General Russel L. Maxwell, administrator of export control at Washington.

The licenses were issued to the British Purchasing Commission, and any exporter wishing to ship either product to any of the designated countries need only to obtain the permission of the commission to use the license number, which must be placed on all export declarations.

Named in the list of countries to which shipments would be permitted without formality were Australia, New Zealand, Newfoundland, Union of South Africa, Burma, India, Palestine, Tanganyika Territory, Aden, Leeward Islands, Windward Islands, Bahamas, Barbados, Bermuda, Jamaica, Trinidad, Gold Coast, Nigeria, Sierra Leone and Straits Settlements.

Additional Priorities

Nickel and synthetic rubber have been placed under priority control by the Office of Production Management.

Sweden Finds Producer Gas Economical Motor Fuel

Producer gas, made directly from either charcoal or wood, is rapidly substituting gasoline as fuel for the motor vehicle traffic in Sweden.

The wood fuel costs about 26 percent less than gasoline at prevailing prices. One of the big features of the development is that every combustible material such as weed, brush and possibly straw might also be utilized as fuel for farm tractors and trucks.

The war has necessitated this change. When hostilities broke out in September, 1939, Sweden had in operation 280,000 motor vehicles of all types. The greater portion of these had to be laid up for lack of gasoline. There being no restriction on the use of wood or charcoal, many trucks resorted to the use of producer gas, derived from charcoal, as was done in the first great war.

Charcoal is made from wood, preferably in dry condition. In Sweden, fairly

large quantities are produced each year, usually from slabs, tree tops and waste, surrounding the lumber industry. When charcoal was again required as fuel for the motor vehicles, the supplies were soon exhausted, and no cheap, dry wood supply was readily available. Nothing else was left except plain, green wood.

The equipment used in the first great war, to facilitate the use of producer gas, had in the meanwhile been greatly improved. It was soon found that wood, cut into small cubes of about two inches, served almost equally as well, though the rate of burning being more difficult to control.

The use of wood directly is the outstanding and rather startling development, there being no scarcity of wood, and furthermore, useless, crooked and twisted pieces, could be used. Already 35,000 motor vehicles, mostly trucks, have been equipped for use of producer gas as fuel. Many more are ready to become so as soon as equipment can be got ready. To serve these with supplies of wood, or charcoal, new depots are springing up all over the country along the highways, and a great number of people are finding new and profitable employment.

The equipment consists in the main of a retort, placed on a trailer behind the vehicle. The retort, somewhat similar to the tub of a washing machine, though larger, has a lid on top, for refueling, which is kept tight. There is a slow draft allowed from the bottom, and the gas and smoke produced from the burning of the wood, or charcoal, in the retort, is sucked into the engine by way of a tube. Evidently the only change to the engine equipment is a new or altered carburetor.

The above information is gathered from articles appearing in a Swedish road journal called "Svenska Vagforeningens Tidskrift." In an article in this paper written by Sten Gyllensverd, civil engineer, the contributor describes a trip by car, using charcoal as fuel, in which he himself took part.

"The trip was made in the summer of 1940, in an ordinary six-cylinder, two-door car, with three passengers and one dog. The start was made from Halmstad in the south, and contacted Trollhattan, Karlstad, Rattvik, Falun, Orebro, Johkoping and back to Halmstad, a total distance of 1859 kilometer, or 1161 miles. The fuel consumption for this distance was 24¾ hectoliter charcoal, or 75 kilometer per hectoliter of fuel. One hectoliter is 100 liter, and one gallon is 4.54 liter. Thus one hectoliter is about 22 gallons.

"The cost of charcoal was five kroner per hectoliter, or $1.25. This average to 6.67 ore per kilometer, or 2.6 cents per mile. The gasoline would have cost at then prevailing prices in Sweden, about 26 percent more."

In addition to the above data, the writer of the article states that no discernible quantity of lubricating oil had been used on the trip, since a very small quantity of oil is required with producer gas as fuel. The retort was cleaned twice on the trip. Best results were obtained when the retort was kept well filled with fuel. Each filling required from one to three hectoliter, and 13 fillings were made. Rough roads, with down-hill slopes, assisted the burning of the fuel and thus increased the effective power of the engine. The average speed made was 46.4 kilometer per hour, or 29 miles.

El Roble Test Below 8000 Feet; Guario Tests Active

On the San Joaquin structure in eastern Venezuela, Socony-Vacuum Oil Company was proceeding with Guario Nos. 3 and 4. A few weeks ago, No. 3 was below 5700 feet while a steam rig was being prepared for deepening. At the same time, Guario 4, down about 1400 feet, was cementing 9⅝-inch casing. Anaco 1, a wildcat in the El Roble area, was drilling below 8000 feet. Another Socony-Vacuum Oil Company wildcat, Panchita 1, north of the Orinoco river in Anzoategui state, was being given an electric log survey. Bottom was slightly below 2900 feet.

Late in January, Socony-Vacuum Oil Company's Guario 2 flowed 976 barrels on ¼-inch choke in a 24-hour test. Flow was through perforations at 6868-73 feet, from sands topped at 6860 feet.

Canadian Oil Controller Given Price-Fixing Power

Power to fix maximum and minimum prices at which petroleum products may be sold or offered for sale in any part of Canada has just been conferred by the Dominion Government on its wartime oil controller, G. R. Cottrelle of Toronto, in regulations published in an extra edition of the Canada Gazette.

In the original regulations setting out the oil controller's jurisdiction—an order-in-council dated last June 28—Cottrelle was empowered only to fix "maximum prices and maximum markups."

The new regulations also permit Cottrelle to prohibit or regulate "any practice or mode of dealing in or with oil" which might tend to increase the price of oil, or affect its orderly purchase, sale, or distribution.

Cottrelle's power to fix or limit the quantity of oil which may be bought, sold, or distributed is continued. The new regulations were drawn up at the oil controllers' request.

The regulations give Cottrelle power to prohibit any person from negotiating for or acquiring in any way any real or personal property, including equipment, for use in drilling, manufacturing, processing or distributing oil, or using oil in any way.

Subject to approval of Munitions Minister C. D. Howe, he may also conduct an investigation concerning the oil industry in order to obtain full information, and in such cases has all the powers of a commissioner under the Enquiries Act.

El Roble 4 Drilling Below 9800 Feet in Venezuela

Standard Oil Company of Venezuela was drilling El Roble 4, eastern Venezuela, below 9800 feet on March 3. The test, on a concession held by Pantepec Oil Company, was being deepened to include sands producing in El Roble 3 at around 9800 feet.

Venezuela Test in Tigre District Preparing to Test

Mene Grande Oil Company plans to test L. G. 3, in the Tigre district of eastern Venezuela. Test was below 6200 feet, and may go to around 6500 feet. In the Santa Rosa field, opened late in January with completion of Santa Rosa 2, the company was drilling below 2300 feet in No. 3, 1200 meters east of No. 2.

Suit Attacks Latest Texas Proration Order

Harrison Oil Company and J. S. Abercrombie Company have filed suit in the fifty-third district court at Austin attacking a Texas proration order that became effective March 10. In the order, the Texas Railroad Commission reduced the allowable for the Old Ocean field from approximately 17,000 to 7,000 barrels daily, and operators complained, in the petition filed, that the order destroyed markets for their production, and would result in physical waste.

The petition declared the company had developed an elaborate recycling operation in the field, and that the reduced allowable interfered with operation of this unit. The suit has been set for hearing on March 18.

Earlier last week, the company had filed a petition with the commission asking that it revise its order as to the Old Ocean field, but the commission declined, and announced that the question would be discussed at a state-wide hearing set for March 17. Thus, in the event operators do not get relief from the commission after the hearing, they may go to court the next day and seek relief.

Suggest Federal Charters For National Corporations

Enactment of legislation requiring oil and other corporations doing a national business to secure federal charters was recommended March 11 by Chairman Joseph C. O'Mahoney at the final hearing of the Temporary National Economic Committee.

Unable to appear personally because of illness, O'Mahoney's closing statement was read to the committee as it prepared to embark on the drafting of its report to Congress on monopoly in industry and trade.

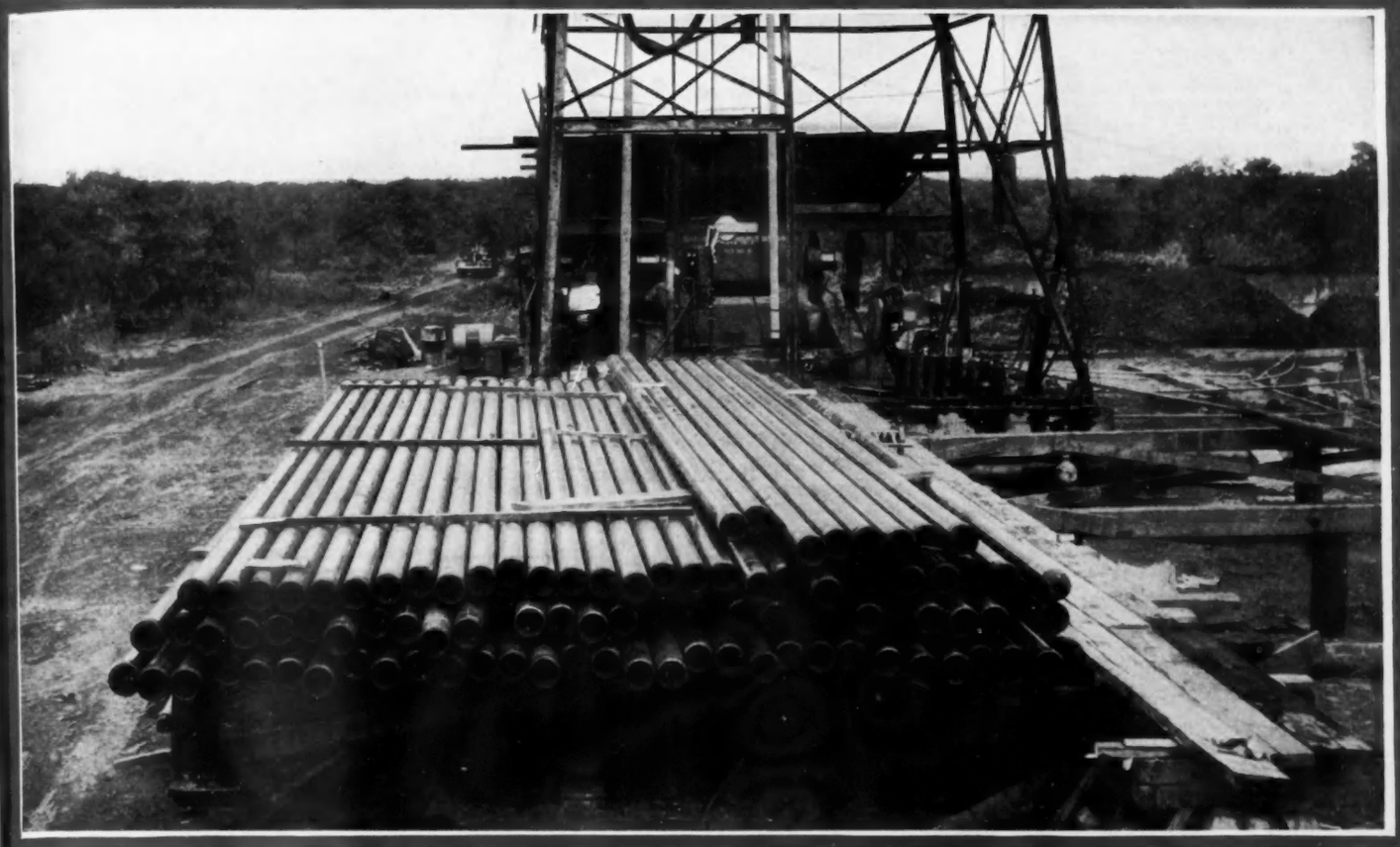
With federal licensing, O'Mahoney advocated strict enforcement of the antitrust statutes and tax relief for small business, declaring that such a program would pave the way for halting a trend toward domination of our national economy by a few large corporations and "avoid the continued expansion of government control over private business."

Louark and Carter To Merge April 1

Louark Producing Company, producing subsidiary of the Standard Oil Company of Louisiana with headquarters at Shreveport, will be merged with The Carter Oil Company, Tulsa, effective about April 1, according to joint announcement of M. J. Rathbone, president of Standard Oil Company of Louisiana; J. J. Conry, president of The Carter Oil Company, and J. R. McWilliams, president of Louark Producing Company.

The merger will enable the Louisiana company to concentrate on its refining, marketing and pipe line operations.

While The Carter Oil Company will be the continuing company, operations in Louisiana, Arkansas, Mississippi and Alabama will continue to be handled from Shreveport. The merger may require some adjustments in personnel, the announcement declared, but the established policy of retaining all employes with long periods of service, and of absorbing to as great an extent as possible those other employes with shorter periods of service, will be observed.



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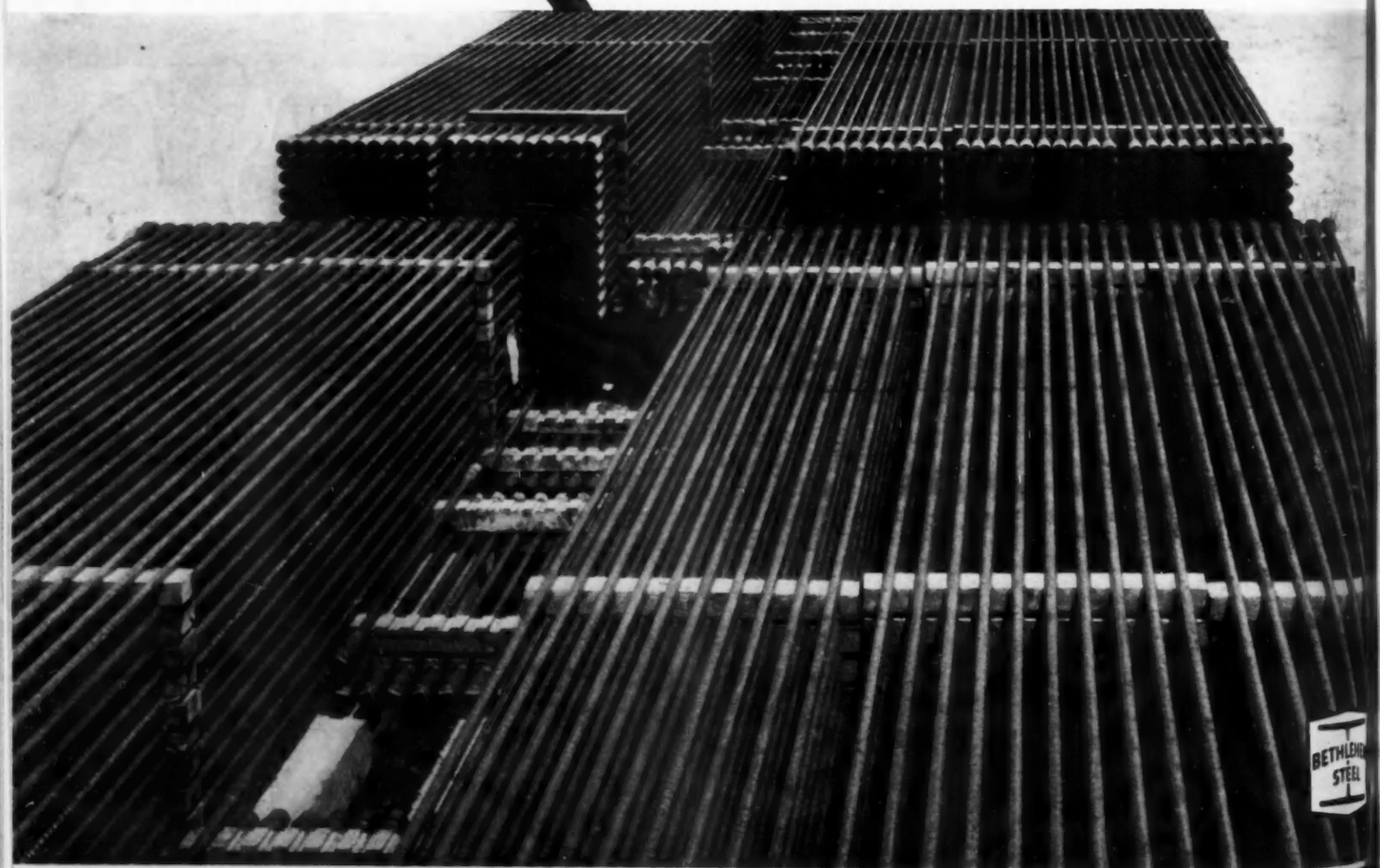

BETHLEHEM STEEL COMPANY

U. S. FIELD OPERATIONS

Illinois

Five Wildcats in Two Counties Show for Oil Wells

Four White County wildcats were showing for producers, and another prospective pool opener in Clinton County was being prepared for test.

Newest of the White County wildcats to find promising pay was Benedum-Trees' Stimson 1, SW SW NE 19-7s-11e, which swabbed 26 barrels of pipeline oil, natural, in three hours from Tar Springs at 2115-2123 feet. Swabbing was continuing, although operators intend to deepen the hole a few feet. The test is about seven miles from production.

Kingwood Oil Company and Sinclair-Wyoming Oil Company's H. M. Porter 1, NE SW SW 12-7s-8e, was being tested on pump after swabbing three barrels of fluid an hour from Cypress sand at 2579-85 feet. The fluid was about 2½ barrels of oil to ½ barrel of water. Hole was drilled to Benoist sand, where a drill-stem test showed light saturation, and plugged back to Cypress.

Ralph Halbert's E. P. Hubele 1-A (formerly listed as No. 2) NE NW SW 7-6s-11e, a mile south of the Storms field, was showing for a 70- to 75-barrel well, and swabbed 33 barrels in 11 hours from Palestine sand. The discovery is the first well in the county to produce from the formation.

Jackson et al's Hamilton 1, wildcat in SW SE SW 13-7s-8e, swabbed 10 barrels of oil to 50 barrels of water from Cypress pay at 2612 feet, but was being tested further.

The Clinton County wildcat was J. F. Ashoff's Lampen 1, W½ NW NW NW 16-1n-2w, 11 miles west of Centralia, where 10- and 8-inch casing was being pulled Thursday before drilling plug to test three feet of Cypress pay at 1105-1108 feet. Seven-inch pipe has been cemented inside the larger casing. Hole was drilled with cable tools. Nearest production is the Centralia pool, eight miles west.

Two outposts to the Irvington field, Washington County, were near completion. Kingwood Oil Company's Brink 2, northwest Benoist outpost, SE SE SE 15-1s-1w. swabbed 79 barrels in 24 hours and was cleaning following a 3-quart shot: Shell Oil Company's B. Brown 4-c, NW 23-1s-1w, north Devonian outpost, swabbed 1/3-barrel of oil an hour before acid treatment.

Benedum-Trees' closely watched Johnson County wildcat, Cavitt 1, SW SW NW 24-11s-3e, was abandoned in Devonian lime at 4250 feet. At an elevation of 719 feet, the venture topped Glen Dean at 1332 feet, Benoist at 1837 feet, St. Genevieve at 1995 feet, St. Louis at 2405 feet, Osage at 2870 feet, and Devonian at 4097 feet. A drill-stem test of the Benoist at 1831-47 feet showed only water and mud, although a stain of oil was revealed in a core of the formation.

A Saline County wildcat, Paul Diggs Looms Hardesty 1, C W½ NE SW 20-7s-5e, east of the Thompsonville field in Franklin County, cored a show of oil in the McClosky at 3287-3290 feet which on a drill-stem test showed 700 feet of fluid, oil and water, in 45 minutes. The lower part of the core reportedly carried sulphur water. However, a fishing job was underway for lost drill pipe at 3360 feet. Another wildcat in the county, two miles south of Eldorado, Potter-Rubeling's J. O. Thaxton 1, C E½ NW SW 28-8s-7e, was abandoned, after several weeks of testing, at 2950 feet.

An important outpost to the Mt. Carmel field, Wabash County, E. O. Olds' Parkinson 1, block 52, Mt. Carmel townsite, a mile south of production, plugged back to Cypress sand after an unsuccessful test of the McClosky. Casing was to be perforated.

W. O. Morgan, Centralia operator, has spudded an outpost to the Benton field, Franklin County, Minier 1, NW NW NE 36-6s-2e, a mile south of production.

Townlot Campaign Looms

Watkins et al's Pfeiffer (Rossler) 1, Section 35-1s-7e, a mile west of Fairfield, was rated at 450 barrels daily in McClosky lime and may presage development of town lots in Fairfield, Wayne County. The well is an offset to a Rosiclare producer, and the first McClosky producer in the area. Prospects for an excellent producer in Keith township of Wayne County were indicated by recovery of McClosky saturation at Sanders' Gill 1, E½ NE NW 24-2n-7e, a semi-wildcat. Operators reported electric log showed 26 feet of McClosky. Location is ¼-mile west of nearest production. Plug was to be drilled late in the week. The Pure Oil Company was preparing to spud a new wildcat, T. R. Michels 1, SW NW 24-2n-7e, a mile south of Gill 1. The company plugged a wildcat east of the Boos field, Jasper County, Frank Ochs 1, Section 23-6n-10e, at 2893 feet in McClosky.

An electric survey of Holleman's Cruse 1, Fayette County wildcat near the village of St. Peter, NE SW NW 36-5n-2e, revealed no oil shows at any depth, and hole has been abandoned at 2193 feet, through the St. Genevieve. Paul Doran, Vandalia, was contractor.

In the Lake Centralia-Salem pool of Marion County, W. C. McBride's Lee 17, Section 29-2n-2e, has been bottomed at 4645 feet and will be completed at that depth. The well swabbed and flowed 101 barrels of oil in 24 hours. Several other Trenton operations were nearing completion, showing for 100- to 200-barrel wells.

The Tonti field of northern Marion County was receiving its first Trenton test, Larry Romine's Varde 1, farmout from Chitonti Oil Company, Section 33-3n-2e, drilling from the surface at 1000 feet. It is one location east of Varde 1, dry in the McClosky.

In the new Dahlgren field of Hamilton County, Hall Jordan's Deerhake 1, Section 34-3n-5e, was making 15 barrels an hour on pump after acid, from McClosky lime at 3330-60 feet after swabbing 850 barrels in a 24-hour test.

Indiana

Posey Wildcat Testing Aux Vases Sand Zone

A. W. Cherry and Barron Kidd's Pocket Realty Company 1, NW NE NW 2-4s-14w, Posey County wildcat two miles west of Griffin, was drilling plug to test Aux Vases sand saturation at 2852-70 feet. Starting at surface elevation of 372 feet, Glen Dean was topped at 1939 feet.

East of this test, Harris-Meyers have derrick up for Ballard Daugherty 1, NE NW NW 1-4s-14w, Superior Oil Company farmout.

Northeast of Griffin, Earl Hollandsworth's Crum 1, NW NW SW 5-4s-13w, Continental Oil Company farmout, southeast of Ed Holmans' Oeth 1, was dry through the McClosky. Hole was abandoned at 2959 feet. Starting at surface elevation of 383 feet, Ste. Genevieve was topped at 2786 feet.

Gulf Refining Company's Albert Aldrich 1, SE SE SE 31-5s-14w, Posey County wildcat southwest of South New Harmony field, was drilling at 2550 feet, in the Golconda. Starting at surface elevation of 363 feet, Glen Dean was topped at 2424 feet. Tar Springs saturation, too tight to be commercial, was cored at 2291-95 feet. Parker Drilling Company is contractor.

In Pike County, west of Petersburg, Murphy Oil Company's Essie Stewart 9, C N½ SW NW 26-1n-9w, was completed in the Bethel at 1325-27 feet for 30 barrels a day, pumping, without shot. It provides a new pay in an old Tar Springs field.

North ½-mile of the Aux Vases Neiderst pool of Point Township, Posey County, Roger Bauman's Ritter 1, SW SW SE 9-8s-14w, set casing at 2676 feet to test lower McClosky saturation at 2685-98 feet, which on a drill-stem test showed 40 feet of oil-cut mud and no water in 17 minutes. Two locations south of the field's discovery, North Central Oil Company-Miller's Oakland City College 2, SE NE SW 16-8s-14w, also set casing to the McClosky, at 2670-83 feet, after obtaining a disappointing show in the Aux Vases. On the east edge of the Griffin field of Gibson County, in an area previously believed condemned by dry holes to the east and west, W. G. Tubeville's Sam Houston 1, NE NE SE 8-3s-13w, set casing to test Waltersburg saturation at 1986-2021 feet. N. V. Duncan, Fairfield, Illinois, was contractor.

Abandoned at 2020 feet was test in the St. Thomas pool of Knox County, south of Vincennes, Johnson Refining Company's Metropolitan Life Insurance Company 1, NW NE 11-1n-11w, W. C. McBride, Inc., farmout.

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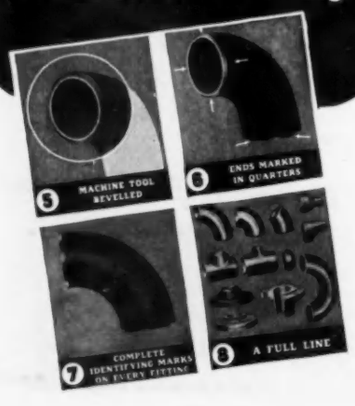

Kansas

Test Between Greenvale and Dubuque Pools Running High

Central Petroleum Company et al's Zeman 1, SWc NE 16-15-12w, 1½ miles south of Greenvale pool and two miles north of Dubuque pool, on a north-south trend, topped Kansas City lime structurally high at 2965 feet. Pay is expected some 50 feet lower, checking higher than producing wells in the above pools. This wildcat is a farmout from Gulf Oil Corporation.

Magnolia Peroleum Company extended Kraft pool, Barton County, ½ mile southwest with a 3000-barrel maximum producer at Grosshardt 1-A, CNL NE NW 9-17-11w. Arbuckle lime was acidized at 3293 feet.

Sharon Drilling Company et al's Nevious 1, SWc NE 21-19-10w, a mile north of Silica pool, Rice County, opened a new Arbuckle lime pool. A temporary potential of 68 barrels daily was established after acidizing at 3273½-3296 feet with 500 gallons. Oil was increasing, with swab recovering 10 barrels hourly on later tests.

Alf M. Landon et al's Shaeffer 1, C W½ NW SW 3-21-13w, three miles southwest of Hiss pool, Stafford County, was a new discovery in Arbuckle lime at 3536-52 feet. After treating with 2500 gallons and reacidizing with 2000 gallons, hole filled 2450 feet with oil. Swab rate was estimated at 35 barrels per hour. Tankage has been for a potential test. A five-quart nitro shot was given between the two-stage acid job.

Armer, Vernon Oil & Gas Company et al extended Prusa pool north at Ney 1, C S½ SW NE 17-16-11w, Barton County. Lansing lime, topped at 2985 feet was penetrated to 3303 feet, but plugged back to 3210 feet where pipe was perforated and ripped. After acidizing with 1000 gallons, a 50-barrel per day pumping potential was established.

Otis gas field was extended one mile northeast at Hannum Drilling Company et al's Haberman 1, C S½ NE SW 8-15-15w, Barton County. The test gauged 17,000,000 feet from Granite pay at 3553-3555 feet, and rock pressure was 650 pounds.

Mid-Plains Drilling Company has either extended Wherry pool, Rice County, or joined East Wherry pool with the major structure, at Thompson 1, CSL SEc NE 11-21-7w, which gauged 35 barrels per day from conglomerate at 3398-3408 feet.

Oklahoma

Erecting Tankage for Okfuskee County's Fourth Strike of Year

Portable Drilling Company and K. G. F. F. Oil Company gave Okfuskee County its fourth discovery for the year at Camp 1, SWc 6-11n-9e, a mile west of Castle and two miles east of Dill pool. Hunton lime was perforated at 3950-60 feet with 41 shots through 7-inch casing run to below 4000 feet, with hole bottomed at 4008 feet. When opened slightly the wildcat shot a stream of oil over 100 feet across the slush pit, backed by over 10,000,000 feet of gas. Connections were being completed and tankage erected for testing. The strike topped Oswego lime at 1668 feet, Calvin 1730 feet, Henryetta Coal 2105 feet, Senora lime 2200 feet, Allen sand 2215 feet, Earlsboro 2489 feet, Inola 2698 feet, Salt sand 2745 feet, Brown lime 2905 feet, Booch 3070-90 feet, Gilcrease 3232-49 feet, Fayetteville 3550 feet, Mayes 3765 feet, Woodford 3890 feet, Hunton 3915 feet and Sylvan shale at 3990 feet. Booch and Gilcrease sands showed strong oil possibilities on electric log and core samples. Operators have a block of approximately 400 acres.

Sunray Oil Company completed the Guthrie pool discovery, Donoghue 1, C NW SE 7-17n-1w, for a flowing gauge of 2160 barrels per day through tubing. Flow averaged 90 barrels per hour during the test, but since increased to 100 barrels hourly. Pay is Second Wilcox sand at 5425-45 feet. Five locations have been staked surrounding the discovery on a 10-acre spacing program. Continental Oil Company staked Donoghue 1, NEc SW 7-17-1w, a west offset, with contract to Fain Drilling Company; Sinclair Prairie Oil Company staked Sult 1, SWc NE 7-17n-1w, a north offset; Sunray Oil Company staked three diagonal offsets to the southwest, northwest and northeast, respectively, in SW NW SE, NWc SE and NE NW SE in 7-17n-1w, on the Donoghue lease.

The Guthrie pool discovery provided an impetus to wildcatting in Logan County. Carl S. Ford, Enid, staked location for a Wilcox sand test in SW SE SW 17-15n-3w, two miles west of Seward pool. Supporting the test are Sinclair Prairie Oil Company, Atlantic Refining Company, Stanolind Oil & Gas Company and Amerada Petroleum Corporation. South of Seward and two locations north of a small producer of Sinclair Prairie Oil Company on the Koetsch lease, Jay E. Jones et al have derrick at Bosserman 1, SE NE SE 22-15n-3w, with G. & M. Drilling Company having contract for a Wilcox sand test. The Carter Oil Company was drilling below 3000 feet at Gaffney 1, C E½ SE NW 12-16n-1w, south of Langston pool. North of Lovell field, Kerlyn Oil Company was drilling below surface pipe at Wareing 1, SW NE SW 33-19n-4w, Logan County.

Two important wildcats were staked in Payne County. J. E. Crosbie's Hugle 1, SEc SW 29-20n-2e, four miles north of West Stillwater pool, and Wood Oil Company's Daniels 1, SEc 15-19n-3e, two miles north of Stillwater pool.

New Gas Pay in Hughes County

Magnolia Petroleum Company completed the initial Cromwell gasser in an old shallow gas area at McKoy 1, SWc SEl 16-5n-11e, seven miles east of Calvin pool, Hughes County. Cromwell sand was perforated with 40 shots at 5360-

4505 feet and open flow was 10,750,000 feet with 2100 pounds rock pressure through open tubing.

Skelly Oil Company perforated nine zones in Deese sand series at Edmondson 1, C N½ NW NW 23-5n-8w, with 326 shots for a 2600-foot oil fill-up. Perforations were between 4930 and 5300 feet. In 15 hours, swab recovered 60 barrels of 24-gravity heavy black crude. An additional 80 shots at 4500-40 feet brought oil. In 15 hours, it swabbed 48 barrels. The test is in the north end of Chickasha gas field, Grady County.

Paul J. McIntyre, C. C. Cummings et al's Brown 1, SW SE NE 14-9n-7e, between Bethel and East Seminole pools, reacidized Hunton lime at 4050-4106 feet with 5000 gallons behind a 175-barrel oil load. After recovering load, the wildcat flowed 16 barrels of fluid, 50 percent water, per hour. Gas pressure diminished to 1,000,000 feet per day. Crude was being treated, and testing will continue to clear the hole of drilling fluid and acid water.

Clyde Dorr et al's Riley 1, NEc SE 34-13n-1e, a mile south of Jones pool, Oklahoma County, cored dry dolomitic lime at 5797-5802 feet. Cleveland sand zone was topped at 4440 feet, and saturation drilled at 4660 feet in that formation which is productive in the three-well Jones pool. This wildcat is checking over 50 feet structurally higher than discovery.

Oklahoma Natural Gas Company completed another large gas well in the Deese sand zone of Chickasha gas field. Edmondson 4, C S½ NW SW NW 23-5n-8w, recorded 90,000,000 feet per day. Hole was bottomed at 4526 feet.

Forest City Basin

Nebraska's Falls City Pool Has Two New Oil Wells

Falls City pool, Richardson County, Nebraska, recorded two new completions. The Ohio Oil Company's Bahr 1, SE SW SE 7-1n-16e, treated with 100 gallons of butane as penetrant and 500 gallons of acid, had an 800-foot oil fill-up in one hour. Swab recovered 300 barrels, and operators are rigging up pumping unit. Pay is Hunton lime at 2272-80 feet. Same company's Sandrock 7, NW NE SW 20-1n-16e, jetted Hunton lime at 2232-36 feet in two stages of 500 gallons each to establish pumping potential of 480 barrels per day. The Ohio Oil Company will drill plugs at Boice 2, SEc NE 18-1n-16e, south offset to the discovery. Hunton lime was topped at 2312 feet, and penetrated to 2320 feet. Casing was set on top of lime. Structurally, this test checked 38 feet lower than the discovery.

I. T. I. O. Company's Schaible 1, C SW SW 29-3n-16e, southwest diagonal offset to the Shubert pool discovery, Richardson County, swabbed 14 barrels of crude per hour for seven hours to establish a potential of 316 barrels per day. Hunton lime was treated with 1000 gallons at 2474 feet. The Ohio Oil Company is shortly expected to stake location for offset test. Second producer for pool checked higher than the discovery to indicate a southwest trend.

W. H. Martgan et al's Smith 1, C E½ NW NW 31-3n-16e, one mile southwest of Shubert pool, Richardson County, was testing light saturation encountered

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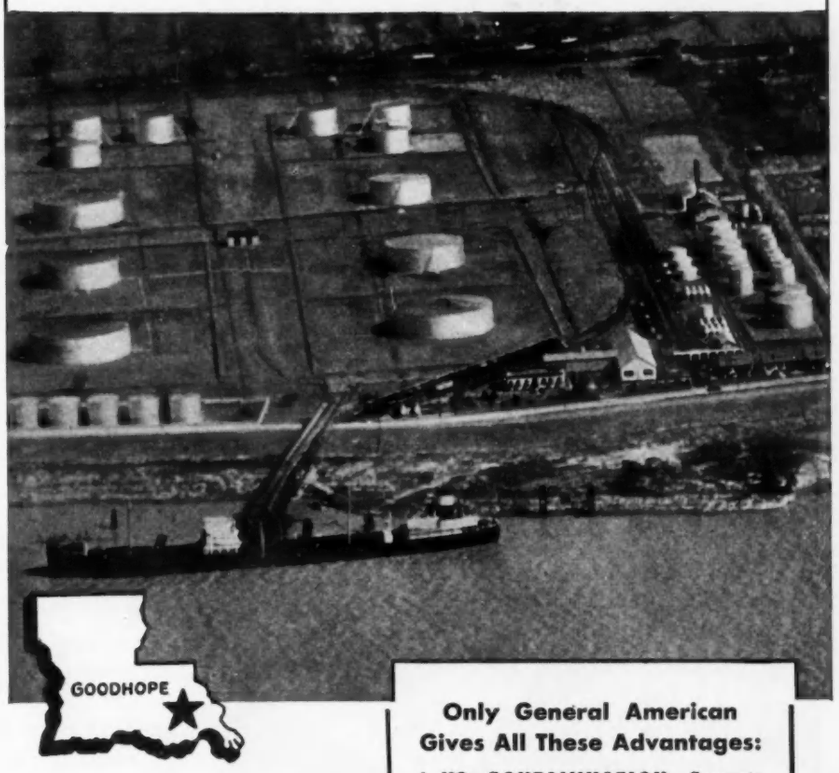

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in Hunton lime at 2528-39 feet. Five and one half-inch casing was set at 2515 feet, and hole was bottomed at 2539 feet. This wildcat topped Lansing at 909 feet, Mississippi 2137 feet, Kinderhook 2270 feet, and Hunton lime at 2513 feet. In the same area, Henry Bollen et al's Bankers Life 1, C SW SW 30-3n-16e, topped Lansing lime at 948 feet, and was rotating below 1875 feet, expecting Mississippi lime shortly.

In Taylor County, Iowa, Smythe, McLaughlin & Comfort et al's Hook 1, C NE NW 18-69n-35w, underreamed 8-inch pipe to 1495 feet, and bottomed hole at 1537 feet. Pryor & Lockhart and Stanolind Oil & Gas Company's Marr Estate 1, C E½ NE SW 32-68n-33w, was making hole below surface pipe with standard tools.

North Texas

Clay County Well Has Mississippian Oil Show

Clay County has recorded its first oil production from the Mississippian lime, which is a comparatively new source of high-gravity oil in the district outside of several nominal strikes in Young County. The discovery involves Shell Oil Company's A. D. Coleman 1-A, NEc Block 24, Calhoun County School Lands, 7¾ miles southeast of Henrietta and 4¾ miles southwest of the Hapgood 3-well pool, and the test was drilling at 6510 feet to explore the Ordovician beds before running pipe for completion. Entering the Mississippian at 6126 feet, broken saturation was logged at 6128-54 feet. Formation tester yielded 3303 feet of oil and 30 feet of oil-cut mud in 10 minutes. Additional oil saturation was recorded in coring to 6221 feet, and second drill-stem test at 6131-6221 feet resulted in good gas blow in 3 minutes and steady flow of 44-gravity oil after 16 minutes. Bottom-hole pressure was calculated at 300 pounds. This performance heralds completion of commercial well in the Mississippian should the Ordovician prove dry.

Shell Oil Company's wildcat logged top of Bend at 5835 feet, being 28 feet low on this marker when correlated with the nearest test in the Hapgood pool, which does not have the Mississippian beds. However, it is 36 feet low when correlated with Omohundro-Youngblood & Foree's Wynn 1, located 4 miles south by east. The latter was abandoned in Simpson at 6546-6654 feet last September, with top of Mississippian tentatively called at 6445 feet.

First Mississippian production for Archer County was apparently realized when King Oil Company et al's Taylor 1, wildcat between the Hull & Silk and Mankins fields, pumped 59 barrels of oil the first 16 hours after 70-quart nitro shot at 4922-44 feet. Top of Mississippian was called at 4929 feet. The hole was plugged back from dry Ellenberger dolomite at 4963-5055 feet. Several tests in the Mankins pool have showed promise of oil production in the Mississippian in drilling through the Bend pays.

Continental Oil Company's Robertson 1, Jack County wildcat that has been in process of completion for several months after developing oil and gas from the Mississippian, topped at 5307 feet, flowed 19 barrels of oil and 1½ barrels of water on latest daily gauge through 17/64-inch choke. The hole was plugged back from water in Ellenberger at 5577 to 5380 feet for nitro shot and acid treatments. It is the first Mississippian strike for the county. The company's Johnson 1, ¾ mile southeast, recorded low structural position in logging top of Bend at 4415 feet and Marble Falls at 4897 feet. It was drilling at 5510 feet without shows.

Fifth flowing well for the Griffin-Kadane deep pool northwestern Archer County, was assured when Deep Oil Development Company and Jack E. Kadane's Griffin 1, an inside location, flowed 100 barrels of oil via casing in 1½ hours from Strawn at 4374-85 feet. Recent failures to the northeast caused operators to curtail an ambitious drilling program, but the southeast trend is being relied upon for important extensions. Magnolia Petroleum Company's Hayter 1, Southwestern Archer County Ordovician project, was drilling at 4460 feet, having logged top of Canyon at 1680 feet and Palo Pinto at 3067 feet.

Bridwell Oil Company's Myers 1, 3¼ miles southwest of the Burns-Browning 5-well pool, Clay County, was drilling at 5520 feet in black shale. L. T. Burns et al's Southerland 1, ⅝ mile northeast of the pool, was awaiting production test in the regular Strawn after plugging back from dry Bend section at 5322-86

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feet. Shell Oil Company's Wright 2, southeast edge of the Antelope pool, flowed 69 barrels of oil on 3-hour test from perforations opposite upper Strawn at 3189-92 feet, making the twentieth consecutive producer for its discovery block.

Sinclair Prairie Oil Company's Mary Admire 1, southeast edge of the Bonita pool, Montague County, recorded a potential of 1534 barrels of oil from the lower pay, topped at 5424 feet and penetrated 5 feet. It is the nineteenth producer for the pool, which has 5 failures that offset production. The above company's Bonita Northeast Unit 1 failed to indicate production in the regular conglomerate zones, and was awaiting drill-stem test at 5500 feet.

Prospecting in Montague County is experiencing a revival after some months of disappointing results. Seitz, Comegys & Seitz, Inc. is starting J. B. Ritchey 1, NWc S½ Block 66, M. Garnett Survey, 1½ miles southeast of Belcherville, and on the projected conglomerate trend between Nocona and the Ringgold pool. Sinclair Prairie Oil Company's Clingingsmith 1, 4 miles southwest of Nocona, was drilling at 2020 feet, and is on a deep-seated structure as outlined by geophysical information. Two projected deep wildcats were authorized recently between Ringgold pool and Bowie. Benson & Benson's Wilmer Seay 1, 1¾ miles southeast of Ringgold production, is seeking an extension to the latter. Chapman-McFarlin et al's Mose Fowler 1, 5¾ miles southeast of the Ringgold pool, is on a strike between 2 structurally low failures that logged nominal oil saturation in the Strawn and Bend last year. Continental Oil Company and Walter Gant are due to resume prospecting shortly on their block, centering 5 miles north of Bowie, as their first test gave promise of making a small oil well before casing collapsed. Tom F. Hunter and Wilcox Oil & Gas Company's Barcus-Conoco 1, 6 miles north of Bonita and 1½ miles southeast of 1800-foot production, failed to reach granite as anticipated in drilling to 4705 feet. The hole was plugged back to 4352 feet for a production test in conglomerate with 5½-inch pipe at 4313 feet.

Two Basal Canyon horizon wells were in process of completion in the Fargo pool, Wilbarger County. Amerada Petroleum Corporation's Goodpasture 1-B, north edge of pool, was flowing in pits to clean itself, with 5½-inch casing at 3969 feet. Broken pay was logged at 3971-4012 feet followed by shale to 4021 feet. The company's Harrell-Magnolia 1, south outpost, was also flowing into pits after perforating pipe opposite saturation at 3931-45 feet. The latter gave promise of making a 100-barrel pumper after nitro shot and 5000-gallon acid treatment in broken Strawn pay at 4410-66 feet, and 4498-4578 feet, with the hole bottomed in shale at 4593 feet. The company's Sears 1 missed the Cisco sand pay, and was drilling at 3476 feet.

Prospecting and lease trading have expanded lately in the north half of Wilbarger County on the strength of the performance of the Fargo pool and the discovery of oil near Harrold. Revived interest is predicated on the possibilities of deep pays, as comparatively few of the exploratory tests attained decisive depths. These old failures afford an abundance of subsurface control, thereby simplifying the task of geologists. Walter Gant et al's Mock-Harrell 1, 1½ miles northeast of Round Timber and opposite Jackson County, Oklahoma, was drililng at 5350 feet on a 6000-foot depth contract.

West Texas

Crane County Wildcat Rated Year's Important Discovery

An Ordovician strike in Crane County along the 11-mile interval that separates the Sand Hills multi-pay field and the comparatively new Abell pool, Pecos County's only Simpson sand area, is rated as the most important discovery in West Texas this year. Having passed up gas and possible oil production in the Permian, Gulf Oil Corporation's W. N. Waddell et al 17, C E¼ of E¼ H&TC Section 15, Block 3, and 4 miles south of the Sand Hills field, encountered exceptional structural relief in developing flow of high-gravity oil and gas from dolomite saturation at 5602-48 feet in Ellenberger topped at 5584 feet. Formation tester used at 5602-37 feet yielded 63.7-gravity distillate and gas volume rated at 6,000,000 feet daily. Second drill-stem test at 5602-48 feet duplicated the gas flow, which was accompanied by 49.4-gravity oil. Seven-inch pipe is cemented at 5635 feet to complete. This wildcat indicated a producer in the Tubb lime section of the Permian at 4112-4227 feet.

Gulf Oil Corporation holds lease on all close-in acreage, and a substantial portion of the territory between the new strike and the Sand Hills field. Core-drill and geophysical information projects a continuation of the Sand Hills structure to the south to embrace the site of Waddell et al 17, and it is understood that the company will designate same as an extension rather than a discovery. The prospect logged base of Permian at 5538 feet, with an elevation of 2463 feet, followed by 46 feet of detrital beds. The Simpson is cut out as is the case on the south end of the Sand Hills field. The Ellenberger marker varies from 81 to 91 feet higher than the 2 nearest producers. The most interesting geological development is that the Simpson beds attain a great thickness immediately east, as Moore Brothers et al's Barnsley 1, a 6829-foot failure situated 2½ miles due east of Waddell et al 17, penetrated 561 feet of Simpson, topped at 6268 feet, or 3796 feet sub sea. The latter logged base of Permian at 5715 feet, being 168 feet low when correlated with the pending completion.

Gulf Oil Corporation's University 1-F, Crane County wildcat between the Church and Fields and Sand Hills areas, qualified for listing among the deep tests in progressing to the 10,020-foot level the past week. It is in lime and shale beds of Simpson age, having entered this middle-Ordovician member near the 9600-foot level. It is due to continue to the Ellenberger.

Production from lower sand beds in the Simpson appeared hopeful for Magnolia Petroleum Company's Sharp-State 1, ⅞ mile west by north of nearest

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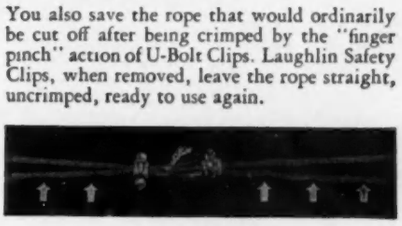

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production in the Abell pool, from broken sand at 5935 feet. Third drill-stem test at 5905-35 feet yielded 180 feet of oil and 150 feet of oil and gas-cut mud. No water was present, although this outpost filled 3000 feet with water on initial attempt to complete in the regular oil horizon at 5468-73 feet, with 7-inch pipe at 5465 feet. Drilling was under way at 5945 feet. The test may be carried to Ellenberger before plugging back to set liner and try for a completion in the prospective second pay. Sharp-State 1 is on the west dip of the structure, having logged top of Tulip Creek at 5170 feet, or 207 feet low to the discovery. Magnolia Petroleum Company has started operations on Markey 1-B, Crockett 1 and McKee-Tex-Mex 2. Sinclair Prairie Oil Company has 2 active operations.

Phillips Petroleum Company's Silverman 1, indirect offset to the Abell pool discovery, logged top of Simpson at 4750 feet, with an elevation of 2393 feet, being 6 feet high, and was drilling at 4860 feet. The Tulip Creek marker, due near the 4950-foot level, affords more accurate check on structural position throughout the field since it is not subject to erosional conditions that prevail in the Simpson beds. Stanolind Oil & Gas Company's Conry-Davis 1, 4 miles southeast of the discovery, logged top of Yates frosted grains at 1140 feet, with an elevation of 2376 feet, being 84 feet high, thereby confirming the rise of the structure to the east. This outpost was drilling at 2250 feet.

Development of the Abell area has progressed sufficiently to brand it as a major oil source that will justify the large-scale drilling to become necessary by short-term leases and natural offsets required by the completed wells and those projected. A few more completions will result in a direct pipe line connection, as two carriers are contemplating entry from Crane County.

Atlantic Refining Company and Sun Oil Company's Holt 2-B, mile east and north of nearest production in the North Cowden field, earned a potential rating of 587 barrels of 31-gravity oil after 540-quart nitro shot in broken pay at 4461-4520 feet.

A mile north extension for the Hockley County sector of the Slaughter field was forecast when Magnolia Petroleum Company's Wilson 1, southeast corner Labor 8, League 41, encountered first oil-stained lime at 4850 feet, and porosity improved in drilling to 4880 feet. This outpost logged top of first lime at 3680 feet with an elevation of 3575 feet. No dry holes have been drilled on the north flank of the structure, which has a width of 14 miles, and Wilson 1 is expected to pave the way for other important extensions to the northeast of Magnolia Petroleum Company's 2048-acre lease. Geo. P. Livermore's Slaughter-Wright 1, Cochran County wildcat completion recorded in March, 1938, was drilling at 6480 feet in dry lime and shale. No shows have been recorded since mudding off the regular 4900-foot pay.

Geo. P. Livermore et al's Ownby-Shell 1, Yoakum County semi-wildcat and 3 miles northeast of the Waples-Patter pool, flowed 121 barrels of oil with 2,363,000 feet of gas in 24 hours after being shut in for a period. This showing may cause the owners to forego plans to deepen, as it is capable of making its top allowable. Development of edge leases on the east and west edge of the Yoakum County portion of the Wasson field is due to assume greater volume as result of the Drilling & Exploration Company having obtained an aggregate of 1580 acres in 8 tracts from Shell Oil Company. The latter retained mineral rights below 5250 feet, and will receive royalty ranging from 1/16 to ¼ of the ⅞ lease interest. This deal marks the initial entry of the assignee.

Contract has been awarded to Olson Drilling Company for the drilling of the projected 9000-foot wildcat scheduled for southeastern Hale County on united acreage held by Humble Oil & Refining Company, Stanolind Oil & Gas Company and Standard Oil Company of Texas. Location is on the A. F. Byrd tract, 660 feet out of southeast corner of east 300 acres of N½ T. T. Ry. Section 17, Block K, 3 miles northeast of Petersburg. The block extends into Floyd County, and was taken on seismograph information. This wildcat is north of the buried granite ridge that has been partially outlined from Roosevelt County, New Mexico, thence east across Cochran County and possibly related to granite ridge that cuts across northeastern Garza County.

Texas Permits

The Texas Railroad Commission last week issued permits for drilling 292 wells, 79 more than were authorized the week before.

Eleven permits were granted in the

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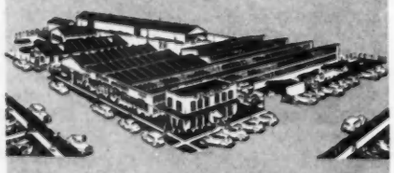

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East Texas field, with 10 in Gregg and one in Smith County, while 36 locations were reported from the remaining portion of the East Central Texas area, including 20 in Wood County.

The commission approved permits for 59 wells in West Texas, including 14 in Ector, 11 in Yoakum, and 10 in Pecos County. Operators in West Central Texas were allowed 35 permits, including 16 in Jones County.

Southwest Texas led the state with 64 permits, including 12 in Jackson, 11 in Jim Hogg, and 10 in Duval County, and operators in the Gulf Coast listed 32 locations.

Forty locations were approved in North Texas, while 15 were reported from the Panhandle.

Ask Change in Spacing Rules for Rincon Field

Continental Oil Company has asked the Texas Railroad Commission to permit wells in the Rincon field, Starr County, to be set in the center of alternate square 10-acre units. Under the plan proposed at a hearing, wells would be 330 feet from unit lines and 933 feet apart diagonally.

The rules in the field now allow wells to be spaced 660 feet apart in a north-south direction and 1320 feet apart in an east-west direction. The new program would allow the east-west distance between wells to remain the same.

The company also requested that the surface casing requirement be reduced from 850 to 300 feet. No fresh water sands are encountered below the 300-foot horizon, engineers said.

The operators asked that the acreage assignment be increased from a maximum of 35 acres to a maximum of 40 acres.

The company is now building a repressuring plant in the field, and when that is complete, it would like to have allowables now assigned to injection wells distributed among those which will continue to produce oil.

A hearing has been scheduled by the Texas Railroad Commission for March 22, to consider revision of the spacing rule for the Seymour field in Baylor County.

At a hearing on March 21, the Commission will take up pooling agreements in the Aransas Pass field, Aransas and San Patricio Counties. The notice provides that the commission will consider "problems of directional drilling and to make any appropriate regulations with reference thereto, to consider existing methods of pooling leases in said field and if necessary to make appropriate rules in reference thereto, to consider amending existing rules and regulations in reference to the spacing and drilling of wells."

Asks Wade City Change

Arkansas Fuel Oil Company has requested that the Texas Railroad Commission revise its proration unit rule for the Wade City field, Jim Wells County. The company asked that the rule be fixed to allow assignment of 30 acres to any well in the field, provided that all portions of the unit are within 1650 feet of the well.

The rule now calls for a 20-acre unit with 30 acres assignable to the final well on a tract. All acreage must be within 1050 feet of the well.

Magnolia Petroleum Company objected to the change proposed.

East Texas

Prolific Producer Extends Hawkins Field Northeast

Productive territory in the Hawkins field was expanded northeast through completion of a prolific oil well, while successful plug-back operations assure completion of a pumper one mile west of the townsite. Field work is showing an increase each week, with the numerous independent owners of townsite leases setting the pace after a belated start.

Red Iron Drilling Company and Bobby Manziel, successors to Folsom et al, broadened the field a mile west when Prince 1 averaged 7 barrels hourly on swabbing test after plugging back from 4883 to 4725 feet. This outpost entered the Woodbine series at 4692 feet, with an elevation of 390 feet, and its poor showing is attributed to subnormal sand conditions as it is higher than the discovery pumper.

Humble Oil & Refining Company confirmed the presence of a gas cap with Georgetown lime protruding above the gas-oil contact near the heart of its lease block.

Dagnell 1 tested dry gas rated at 3,280,000 feet daily through 3/16-inch choke after perforating casing at 4398-4416 feet. Georgetown was logged at 4477-4515 feet. The company's Bryan 1, a short distance southwest, also made a gasser from perforations at 4410-24 feet, with Georgetown lime at 4484-95 feet. The northeast extension resulted from completion of Williams 1, B. M. Hampton Survey, flowing 186 barrels of 24.9-gravity oil on 13-hour gauge through ⅛-inch choke from perforations opposite the deepest sand beds at 4682-94 feet, with the hole bottomed in Georgetown at 4770-79 feet. Four separate sands, aggregating 135 feet, were logged by electrical survey below the gas-oil contact at 4480 feet, or 4070 feet sub-sea.

Skelly Oil Company's Markey 1, third Trinity test for the Mount Enterprise faulted structure. Rusk County, was drilling at 7130 feet, with possible gas show in Rodessa section at 6500-10 feet followed by 10 feet of salt-water sand. This wildcat developed exceptionally high pressure from porous zone at 6503-17 feet in the Second Glen Rose. Delta Drilling Company's Kangerga 1, 4 miles north of Henderson, was drilling at 5200 feet. Sun Oil Company's Henderson 1, first deep test for the Ore City prospect, Upshur County, was drilling at 6020 feet, being above the anhydrite.

Two outpost completions are pending in the Opelika pool, which has six gas-distillate wells and a small oil producer in the Trinity zones. Lone Star Gasoline Company and Shamrock Oil & Gas Company's Tullas-Pure 1, S. Hatton Survey, is seeking a northeast extension and was coring at 7970 feet. This outpost recorded low structural position on the upper markers, but in logging massive anhydrite at 7743-7955 feet with an elevation of 403 feet it is placed within the producing contour. Local faul is attributed as the cause for the variation. The partnership's Magers 1, a west outpost, was awaiting gauge through casing perforations at 8065-8181 feet. Pure Oil Company has assigned the remainder of its acreage to the partnership to assure completion of 11 unitized drilling sites.

First oil production for the southwest flank of the Chapel Hill field, Smith County, is indicated by Sun Oil Company's Dickerson 1, Jas. Holden Survey, which tested small volume of 39-gravity oil in initial swabbing following perforations at 8206-85 feet. Top of Pettit was called at 8095 feet, and the well is bottomed in Travis Peak at 8315-26 feet with an elevation of 494 feet. Between 30 and 40 feet of Pettit saturation was logged below 8212 feet. Lease trading has been revived in the area, while substantial demand has developed for leases on the northwest flank of the structure on the strength of the completion of a flowing oil well by Sun Oil Company and Shell Oil Company's Mary Warren 1 from Pettit at 8182-8209 feet. This outpost passed up promising gas-distillate production in the Paluxy, which produces on the flanks of the north portion of the structure.

Southwest Texas

Minor Extensions, No New Discoveries During Week

Minor field extensions were effected in a number of South Texas Gulf Coast fields. This is the first week since the first of the year that neither a new field nor a new sand in a present one has been uncovered.

LaWard area of Jackson County becomes a potential hot spot of development, two outposts being started and one completed as a producer. Each 5200-foot Marginulina sand producer has shown a high potential test, indicating that this structure may be a more than ordinary reserve. Humble Oil & Refining Company's Mauritz 2-B, 1689 feet northeast of the discovery, found the pay at 5219½-5228 feet and on a production test flowed 561.6 barrels of clean 24.4-gravity oil per day through ¼-inch choke under 650 pounds on tubing and 750 pounds on casing. Gas/oil ratio was 257/1. The company is starting one outpost one mile southwest of production and is drilling another well ¾ mile southeast of the field.

After testing a small amount of gas and some distillate, Humble Oil & Refining Company squeezed perforations at 7840-56 feet in St. Charles Bay 1, two miles northeast of Lamar in Aransas County. New perforations are scheduled to be made.

Brooks County received a larger portion of the LaGloria field as a 3590-foot southeast extension was effected in an outpost drilled by LaGloria Operators Committee. Riley 1, Lot 11, Block 8, made a dual-sand distillate producer through perforations at 6162-80 feet and 6672-95 feet.

Duck Bay field, Calhoun County, was being extended into the submerged area

with the first well on state property. Coronado Corporation's State-Duck Bay 20, Section 153, cored sand at 5658-64 feet and casing was set on bottom.

Bridwell Oil Company's Laging 1, ¾ mile west of Wade City field, Jim Wells County, found salt water in the various sands producing in that area and was abandoned at 4900-foot contract.

Too Much Gas

High gas ratio has hampered development of the new deep Willamar field of Willacy County. Pan American Production Company's Kent 1, one mile northwest of the discovery and only producer in the field, was perforated at 7925-70, 7905-15 and 7845-85 feet. Tubing was run and the well flowed oil and gas. The tubing was pulled and rerun on a packer to a point lower in the hole. It is expected that an improvement will result. One location southeast of the initial producer, the company's Willamar 1-B encountered the same trouble when testing at 7955-80 feet and is awaiting the outcome of the Kent well before proceeding with tests.

The third test to drill below 11,000 feet in South Texas is expected to be Pure Oil Company's Newberry 4, Cameron County, and six miles southwest of Point Isabel. It was drilling near that level as the week closed.

Two outposts were abandoned and a third was testing in the Rincon sector of Starr County. Arkansas Fuel Oil Company tested salt water through several levels in Martinez 1, Section 217, and the hole was stopped at 5801 feet. Transwestern Oil Company recently abandoned Cameron 1, a 5500-foot test, and had commenced another well jointly with Alvin Hope on the same tract. These wells are north of the field. South of the field, Continental Oil Company's Davenport 1-D, Section 530, is ready to reperforate after showing oil and water around 4000 feet.

An extension of nearly ½ mile to the east is apparent in the North Sweden field of Duval County as Hiawatha Oil & Gas Company completed Parr 30, San Andres Grant. The test is expected to make a gas producer from a sand at 5588-94 feet. Hole had been drilled to 5995 feet, then casing was set below 5600 feet for the test.

In the extreme northwestern corner of the county, a failure resulted in George Proctor's Frederick 2. It had showed for a possible well in four feet of sand topped at 1191 feet. A production attempt, however, resulted in salt water flow and the hole was carried to 1500-foot contract and abandoned.

J. R. Dougherty's Hicks 7 had opened the Genevieve field of Bee County with a Cockfield-sand producer. Coring saturation in the Pettus sand at 4170-78 feet, the well flowed at the rate of 45 barrels of 48-gravity clean oil per day through 3/32-inch choke under 1000 pounds tubing and 1150 pounds casing pressures. The well is three miles southwest of Normanna and is in the Jose Maria Uranga Grant.

Shallow exploration through the Balcones fault trend has attracted additional wildcatting, several of which give promise of making small producers to open new areas. Bexar, Medina, Guadalupe, Caldwell and Wilson counties are sharing in the new work.

L. A. Douglas et al's Trawalter 1, Tejado Survey, six miles northeast of Lytle, made about 100,000 cubic feet of gas and rocked up 500 pounds pressure when shut in at 1366 feet. It is in the Anacacho lime at 1117-1359 feet and chalk 1359-66 feet. A 1000-gallon acid treatment preceded the test.

About 1½ miles southwest of this well, Joe Naoke's Stidham 1, Block 75, Medina Farms, is testing Anacacho limestone at 1220-42 feet.

One mile southwest of producers in the shallow Gas Ridge field, Bexar County, Leavitt Corning was ready to drill plugs in Bitter 1, Bercerra Grant. Casing was set at 475 feet and the well will be drilled in dry.

Medina County's bid for production in the Edwards limestone is Duncan and Brown's Haby 1, Section 393, and 3½ miles south of Dunlay. After topping the lime at 1596 feet, casing was set and a short section of the formation will be tested.

J. S. Suttle is testing Huebinger 1, 1½ miles southeast of Lavernia, Wilson County, on pump. The well is bottomed at 1817 feet and is in the Navarro series.

One of the key wells along the trend is Shell Oil Company's Jessie Brown 1, Burchard Survey, 2 miles south of Tanglewood in Lee County. It was progressing below 6000 feet, reportedly checking satisfactorily. Fred Pederson's Brown 1, on the same prospect, tested considerable oil from perforations 6389-6390 feet in the Edwards limestone, but will not flow. It is expected to be put on pump.

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Texas Gulf Coast

Two Prospects Show Promise Of Making Oil Fields

There is a possibility that two Texas upper coastal prospects of long standing will be converted to oil fields within the week. Titanic Oil Company's Boyt 2, 2100 feet east of the operator's recent Boyt 1 dry hole on the Double Gum Bayou prospect, in the southeast corner of Liberty County, ran 7-inch casing to bottom at 8757 feet, cemented, and drilled plug to test oil sands shown by electrolog and coring at 8570-80, 8605-15 and 8610-26 feet, the latter section yielding a 2-foot saturated section. The test ran lower than Boyt 1, topping Discorbis at 5900 feet, Heterostegina at 6293 feet, and Flat Marginulina at 6662 feet. The prospect was found by Yount-Lee Oil Company in 1932 by geophysical methods, and has been tested several times.

On the Gulf of Mexico prospect, off the Jefferson County shore, south of Sabine Pass, Hall-Jordan Oil Company, Oklahoma City, and British American Oil Company's State 1-71 was ready for casing that was moved to the piling drilled test, but could not be run as operation was shut down by high water. Electrolog showed sands at 3475-3415 and near 5000 feet, indications that were poorly confirmed by side-wall samples. Bottom is at 6721 feet. The test, which has been delayed several times by high water, and mechanical troubles, is 9000 feet south of operator's State 1-72, junked late last year because of stuck drill pipe. State 1-72 offset I. E. Harwell's State 1, abandoned in 1938 because of drill stem stuck at 5821 feet. Testimony regarding this well at a subsequent investigation of the state land department revealed that sands good enough to make a well were encountered at 2796-2812 feet. The prospect was defined by seismograph, and torsion balance used by Humble Oil & Refining Company, Shell Oil Company, and Magnolia Petroleum Company in 1936-1937.

Humble Oil & Refining Company abandoned Hubbard 4, north edge test at Rowan, Brazoria County distillate area, at 9100 feet after the regular 8500-foot sand flowed salt water. Drill-stem test of this pay showed dry gas, no oil. Company's location for Hubbard 5 has apparently been abandoned as Hubbard 6, 950 feet north of Hubbard 2, offsetting a Rowan & Nichols producer, was spudded and drilled to near 3000 feet.

Southside development for the new Chenango field, Brazoria County, appeared uncertain as J. Newton Rayzor drilled Christian 3, confirmation test in the Wm. Parker Survey, 1320 feet south of the discovery, to 8600 feet, where it was held for orders. In the discovery sand near 8550 feet, the potential pay section was too thin to justify completion attempt. There is a possibility the test will be taken to 10,000 feet. The discovery, Christian 1, was completed for 27 barrels per hour, 20 percent salt water, from 8566-74 feet. Nearby, in the Chocolate Bayou field, Phillips Petroleum Company prepared to test Triangle Development Company 1, mile east extension attempt, with 5-inch casing set at 11,480 feet, 4-inch liner on bottom at 11,856 feet. This test came within 14 feet of equalling the upper Texas coastal depth record established by Glenn McCarthy in Munson 1, Bailey's Prairie prospect, also in Brazoria County, and if completed as a producer in lower 400 feet of hole will capture the producing depth record held by Andrau 1, Chocolate Bayou well a mile to the west.

Republic Production Company will make confirmation test for Cockfield oil in the Spurger field of Tyler County. Location is Republic-Houston Oil Company Fee 7, west offset to Sterne 1, which opened the old gas area for oil production in April, 1940, with flow of 400 barrels of 38-gravity oil daily from Cockfield at 4685 feet.

Strake Petroleum Corporation elected to side-track around collapsed casing in Griffith 1, recent Halls Bayou discovery in Brazoria County, three miles southwest of the Alta Loma field, and was drilling past 10,186 feet. This has been a troublesome completion, with high pressures requiring extraordinary measures to control.

Sun Oil Company had apparently scored a short southwest extension to the South China field, Jefferson County, as Broussard 1 was flowing into pits through ¼-inch choke, tubing and casing pressures 225 and 375 pounds, from sand topped at 7888 feet.

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Louisiana Gulf Coast

Frio May Convert Perkins Into an Oil Field

Lisbon Iberia Petroleum Corporation continued to bid for an oil discovery at Perkins, Calcasiu Parish gas area north of Sulphur near the Beauregard Parish line. Edgewood Land & Logging Company 1, Section 6-8s-10w, was flowing 22-gravity oil at the rate of 10 barrels daily, by heads, from a new Frio sand at 5376-85 feet, making 4 percent mud and 2 percent salt water through 12/64-inch choke, with casing pressure 750 pounds. The sand is at the top of the Frio. Five and one half-inch liner has been landed at 5461 feet, with bottom of the side-tracked hole at 6272 feet. On drill-stem test, the sand yielded 2600 feet of oil and 1505 feet of water, bottom-hole pressure 1500 pounds, while initial production test showed 15 barrels daily, 8 percent water cut. The area was made a gas field by Humble Oil & Refining Company's Edgewood Land & Logging Company 1, which made 900,000 feet of gas daily from Oligocene at 7038-42 feet in August, 1939. Since then, that company has drilled three failures, making farmout for the current test.

Classifying the Perkins test, perhaps prematurely, as a discovery, it appears that of the four 1941 South Louisiana discoveries made to date, only one, St. Gabriel, Iberville Parish, is not in question. At Lakeside, Cameron Parish discovery, Lisbon-Iberia Petroleum Corporation was testing Calcasieu National Bank 1-A, Section 19-12s-4w, at 9972-81 and 9990-96 feet, obtaining 3 to 4 barrels distillate hourly through ⅛-inch choke, with 4,000,000 feet of gas. Official potential of 85 barrels daily was previously taken from this same section, with operator apparently not satisfied with the performance. At Westwego, Jefferson Parish, across the Mississippi River from New Orleans, the discovery was lost as casing collapsed in Titanic Oil Company's Marrero Land Company 1, Section 2-13s-23e, near the foot of the Huey P. Long bridge. Official potential of 238 barrels of 30.3-gravity oil daily was taken through 7/64-inch choke, from 9830-42 feet, in January.

West Bay development, Plaquemines Parish, paid off in the form of a new shallow sand in Tide Water Associated Oil Company's State 1, Lease 451, which flowed 130 barrels of 30-gravity oil daily through ⅛-inch choke from 6262-74 feet, with tubing pressure 970 pounds, casing sealed. On preliminary test, the well, in Section 35-22s-30e, flowed through drill stem at the rate of 15 barrels hourly, using 5/32-inch choke. In the discovery sand, the test showed only 1500 feet of oily mud and water, with perforations at 7318-28 feet. New level is second for the field, which was found in December, 1940, by Gulf Oil Corporation's Timolat 1, south offset to State 1-451, which made 456 barrels daily from 7267 feet, 32-gravity. Gulf Oil Corporation's Buras Levee District 2-E, wild well a few weeks ago, was to be side-tracked at 6785 feet.

Humble Oil & Refining Company persisted in its effort to solve the complex fault pattern at South Crowley, Acadia Parish, drilling Boyd-Finch 2, Section 22-10s-1e, to 500 feet where surface was cemented, and building derrick for Leger 4, Section 22-10s-1e. Boyd-Finch 2 is 1650 feet south of Boyd-Finch 1, the semi-commercial producer which made 20,000 barrels in 1938 to establish the field. Boyd-Finch 1 made 35.2-gravity oil from 7308-14 feet, but if the rule prevails, this section will not produce in Boyd-Finch 2, as each offset here has established a new sand or failed entirely. The company made a new gas sand recently with Jeffers 1, completed with a slight amount of distillate through 20 perforations at 6968-74 feet through 3/16-inch choke, tubing and casing pressures 2500 pounds, gas/oil ratio 13,000/1. Jeffers 1 tested sands at 6986, 8018 and 8182 feet with no success. Producing horizons opened to date have been at 7308, 7602, 8917, 5920, 7093 and 6968 feet.

Superior Oil Company of California perforated for confirmation test of Section 28 Dome, St. Martin Parish, in St. Martin Land Company 1-B, Section 20-9s-7e, 830 feet north of the company's Stuart 1, 1940 gas-distillate discovery, for testing in the discovery sand at 9340-9360 feet. Bottom is at 10,527 feet, with 4¾-inch pipe set at 10,250 feet. The well logged a broken sand showing oil at 4340-72 feet. The discovery tested gas and 57-gravity distillate from 9330 feet. The dome is one of the longest known in Louisiana, having been proven for salt in 1917. Its conversion to production reduced the number of known nonproductive salt domes in the territory to less than a dozen. Possibility of new field discovery existed at one of these, Belle Isle, St. Mary Parish, where Sun Oil Company's Belle Isle Corporation 1 was running casing. Electrolog was reported to have shown an oil sand at 9832-97 feet. This operation is the most protracted in the district, spudded a year ago and delayed by several sidetracking jobs. Captain A. F. Lucas found salt here in 1896, with 33 subsequent tests being drilled for oil, none being successful.

Union Sulphur Company may have a new sand for West Gueydan, Vermilion Parish, in Baker 1, southwest flank test, Section 3-12s-1w. Electrolog showed sand with evidence of oil at 8720-55 feet.

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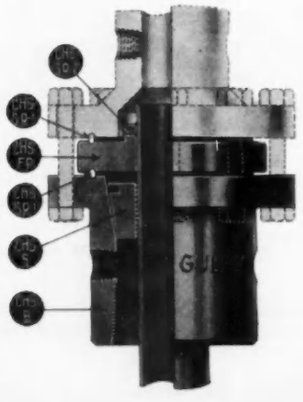

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North Louisiana

Showings of Three Wells Boost Search in LaSalle Parish

Renewed interest in the search for new oil production in the shallow Wilcox horizon in LaSalle Parish was furnished last week by apparent success of two wells, three miles from nearest production, and a showing of oil in a third test, a wildcat.

Four new locations were staked on the DeSoto Parish, Louisiana side of the Joaquin-Logansport wet-gas field by Superior Oil Corporation. This field, productive from the Glen Rose at 4950-5100 feet, has yielded several 100-million-foot-daily wet-gas wells in recent months.

Fifteen miles northeast of Winnfield in Winn Parish, Mid-Continent Petroleum Company is taking wildcat acreage in Township 12 north, Range 1, east. This is an area where large tracts were secured several months ago under geophysical option by Louark Producing Company, which has recently been working the acreage.

Hopes of finding flank production at the 2847-57-foot level three miles north of the shallow Bellevue field, Bossier Parish, were dashed last week when Roy L. Reese's Bellevue Land Company A-1, SW NE SW 27-20n-11w, which had flowed 75 to 80 barrels daily of 47-gravity oil and wash water showed a large percent of salt water.

In LaSalle Parish, three miles from nearest gas production at Summerville, regarded by some as an offshoot of the

Olla field, H. L. Hunt's Tremont Lumber Company 1, NE SE 23-9n-2e, showed for an estimated 60 barrels of oil daily after casing was perforated at 2422-32 feet in the Wilcox. Hunt's discovery well in the Nebo (Jena) field was about the same in production. The same operator's Goodpine B-1, NE NW 33-9n-2e, in the same parish, was estimated as good for 150 barrels daily on the beam, producing from the Wilcox at 3576-81 feet.

Four miles northwest of production at Nebo, Big West Drilling Company's (Grady Vaughn) Whatley 1, NE NE 25-8n-2e, LaSalle Parish, prepared for a production test after logging an oil showing, which was confirmed by electrical log, at 3430-50 feet.

Union Producing Company continued taking gauges in its new Smackover-lime distillate wildcat producer in Claiborne Parish, Meadows A-1, C NE 18-21n-4w. On a 15-hour gauge it made 303 barrels through ¼-inch choke, with casing pressure 3925 pounds and tubing pressure 3600 pounds. Later on a 24-hour gauge it made 222 barrels of distillate in 24 hours through 9/64-inch choke with tubing pressure only 250 pounds and casing pressure not taken. It is North Louisiana's first Smackover lime producer and its first well to produce below 10,000 feet. It was drilled into Permian salt at 11,834 feet and plugged back to 10,478 feet.

M. D. K. Fitzwater made location for a Paluxy wildcat test in Marion County, Texas, Carrie Mosely 1, Located 334 feet northeast of a test on the same lease drilled by Tom Bell several years ago that showed considerable oil.

Arkansas

McKamie Producer Makes Straw-Colored Distillate

Despite reports that the well had shown some oil, the fourth producing well for the McKamie field, LaFayette County, was gauged last week as making 700 barrels of 56.6-gravity straw-colored distillate in 24 hours through ¼-inch choke, with casing pressure 3000 pounds and tubing pressure 2900 pounds. Total depth is 9362 feet. The well is Barnsdall Oil Company's Cornelius 1, SW NW 28-17-23.

In the same field, Atlantic Refining Company's Bodcaw Lumber Company 3, C NE SE 29-17-23, drilled dense lime at 9438 feet (elevation 272 feet), which is deeper than other wells in that field have found saturation. The same company's Bodcaw Lumber Company 4, C SW SW 28-17-23, in a core from 9097-9117 feet recovered 9 feet of firm to soft oolitic lime, the base having hard dense lime but saturation throughout, and prepared to cut another 20-foot core. Elevation is 269 feet. Top of Buckner was 8936 feet and top of Smackover lime was 9050 feet. Top of upper porosity was 9075 feet. This field has two other active locations.

Some live oil was reported during swabbing at U. S. Oil Corporation's Wilford 1, NE SE NE 29-4n-1w, St. Francis County wildcat. Total depth is 2265 feet. Some gas and a trace of water also appeared.

Charles H. Murphy, Jr., may plug back and test around 5000 feet in Cates C-1, NW SW 33-18-15, deep test in Union County. This test showed only a small amount of oil and much salt water, when tested in the Jones (Lower Marine) horizon after casing was perforated at 7583-89 feet. Seven-inch casing was cemented at 7642 feet.

Only one drilling permit was issued last week by the Arkansas Oil and Gas Commission, as follows: Sebastian County—Ozark Natural Gas Company, A. J. Wood 1, C SW SW 24-8n-30w.

Mississippi

Move in for 7000-Foot Test in Lauderdale County

Magnolia Petroleum Company last week moved in materials for a 7000-foot wildcat in Lauderdale County, Mississippi, on a large block assembled several months ago. The test is Culpepper 1, NW NE 4-8n-14e. Location is five miles north of the village of Collinsville.

The southeast edge test at Tinsley Dome, Yazoo County, of P. J. Ruman, Moore-Robertson 1, C NW NW 29-10n-2w, was completed, flowing on preliminary gauge 28 barrels of oil per hour through ½-inch choke after perforating with 250 shots from 4950-5020 feet. Total depth is 5140 feet. Top of chalk was 4930 feet (elevation 336 feet).

A north outpost at Tinsley Dome, Slick-Urschel Oil Company's Slick 14, NE SW 35-11n-3w, after perforating in the Tuscaloosa (Woodbine) from 5930-5940 feet, with 12 shots, made a drill-stem test with packer set at 5880 feet, and recovered 420 feet of thick oil. Total depth is 6120 feet. With elevation of 208 feet this test topped chalk at 4727 feet, topped Woodruff sand at 4778 feet and topped Tuscaloosa at 5915 feet.

Besides abandonment of a wildcat in Attala County, there were three other completions in Mississippi, all at Tinsley Dome. The latter field had one new location for the week. At present the southern end of this field is getting the major part of the drilling.

Sun Oil Company made location for a core-hole test in Copiah County, Natalbany Lumber Company 1, located 250 feet south and 1350 feet west NEc 32-10n-6e. Amerada Petroleum Corporation has taken a wildcat block in Claiborne County, southeast of Port Gibson. The acreage totals about 10,000 acres and is located in Township 11 north, Range 3 east. Exchange Oil Company plans to start drilling soon on a wildcat in Section 23-10n-5e, Madison County, near the village of Ludlow.

An additional 6400 acres in the Tinsley Dome field, Yazoo County, was taken under jurisdiction of the Mississippi Oil and Gas Board last week, as being within the limits of this field and therefore subject to its rules and regulations. The acreage is in the southern part of the field. This brings to 28,160 acres the territory under rules of the commission at Tinsley Dome. Approximately 6000 acres of this is productive. The new order taking in the additional acreage includes Sections 34, 35, 36-10n-3w; Sections 31 and 32-10n-2w; Sections 1, 2 and 3-9n-3w; and Sections 5 and 6-9n-2w.

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Two Wildcats Fail to Fulfill Earlier Expectations

Neither of two promising play openers were established as definite commercial producers last week, and water that developed on initial production tests may seriously cool earlier prospective drilling.

American Drilling Company's Skidmore 1, Section 9-16n-16w, Oceana County, a rank wildcat, pumped 160 barrels of fluid, about 20 percent water, on the first 24-hour test. Further pumping was suspended to wait on an analysis of the water. Skidmore 1 was drilled into a Traverse lime pay at 1782 feet before a producing string had been set. Five-inch casing was later set with a wall packer. Water may be from the shallower Coldwater shale.

About the same situation prevailed at Fulton, Higelmire & Oterskey's Spencer 1, Section 13-10n-5w, Montcalm County, semi-wildcat that went into the Dundee and flowed wild by heads before casing had been set. Spencer 1 was gravel packed in the pay, and a 5-inch string cemented in. After drilling plug, the test carried 2000 feet of fluid in 14 hours with a bailer of salt water pulled from the bottom. Well is under test at 3204 feet in the top of the Dundee.

Regal Dutch Petroleum Company started deepening operations on the first projected Trenton-lime well in the old Salem field, Allegan County. The company, in cooperation with several other operators, is carrying Heasley 2, SE NW NE 21-4n-13w, from its original Traverse lime completion point to deeper formations. The Traverse, which produces at 1500 to 1700 feet in Salem, is the only commercial zone in either the Salem field or Southwestern Michigan excepting the old Muskegon field, where the Dundee and Monroe also was produced.

Attempts to recover the complete string of 4½-inch drill pipe in Gulf Refining Company's Bateson 1, Section 2-14n-4e, Bay County, the state's record depth well, were abandoned March 10, and preliminary measures immediately started to side-track between 6300 and 6400 feet. Of the original 7730 feet all but 1344, on bottom at 7776 feet, was recovered.

California

Deep Test at Inglewood Has 2100-Barrel Potential

Successful completion of R. R. Bush Oil Company's Smith 1, wildcat deep test at the northeastern end of the Inglewood field, Los Angeles County, may be the most important development in that area since discovery of the field by Standard Oil Company of California late in 1924. Bottomed at 8333 feet, well is producing from some 400 feet of formation, and has established potential output of more than 2100 barrels daily of 31-gravity oil, together with 2,100,000 feet of wet gas containing 2.6 gallons of natural gasoline per 1000 feet.

The productive zone is expected to extend up into the crest of the Inglewood anticline as far as the fault, and may cross the fault. Some estimates point to the addition of approximately 80 acres to the proven area of the field. The discovery well is being choked back to meet proration requirements and is currently producing 495 barrels daily, cutting 0.7 percent, through 8/64-inch choke with 850,000 feet of gas with 1900 pounds tubing pressure and 3000 pounds casing pressure.

Amerada Petroleum Corporation defined the eastern limits of the northeastern Coalinga field in Fresno County with S.P.L. 37-17B, outpost in Section 17-19-16. Bottomed at 9511 feet in gray siltstone, the test was wet and was being abandoned. Top of the Kreyenhagen was at 7209 feet, green sand at 8161 feet, and top of the Cretaceous at 9420 feet.

In the Pyramid Hills area of Kings County, Chanslor-Canfield, Midway Oil Company was abandoning Bacqueraz 1, wildcat in Section 17-24-18, after drilling to 1246 feet. Well entered the Cretaceous at 1181 feet. An oil zone at about 850 feet tested wet.

The Texas Company was coring in siltstone at 9435 feet in S.P. 27-13, wildcat in Section 13-17-15, Cantua Creek area, Fresno County. No showings of importance had been encountered, although penetration of thin streaks of tight sand showing gassy odor indicated the equivalent of the Gatchell was being approached or penetrated.

Tide Water Associated Oil Company completed one of the largest wells in the Ventura Avenue field, Ventura County. Ventura Land & Water 47, bottomed at 10,180 feet in the fourth zone, demonstrated a potential of 4231 barrels on 24-hour test, 32.4-gravity oil cutting 1.9 percent water, together with 5,200,000 feet of gas.

Rocky Mountain Area

Colorado's Wilson Creek Receives New Horizon

A new producing horizon for the Wilson Creek field, Rio Blanco County, northwest Colorado, was opened in the Sundance zone when The Texas Company and California Company's Unit 5, C NE NE 34-3n-94w, flowed at the rate of 800 barrels daily of 46-gravity oil. The well, located near the crest of the dome, topped Sundance at 6543 feet, and tested at 6556 feet. Hole then was deepened to 6570 feet for company completion. The Texas Company plans two or three more structurally high wells to define limits of the Sundance sand at Wilson Creek, and until limits are defined production in the Sundance discovery will be held below 250 barrels daily.

At the most, not more than 1200 acres can be brought into production in the Sundance. Three previous wells drilled down structure and completed in the Morrison sand, just above the Sundance, developed water in the Sundance. A fourth test, last June, a mile due north of the new sand discovery, was a failure in both the Morrison and Sundance. However, Unit 4, NW NW NW 2-2n-94w, completed in October, 1940, extended Morrison limits a mile south with a 436-barrel initial through 5/8-inch tubing choke from the Morrison sand at 6120-6630 feet. Joint operators late the past fall completed 18 miles of 4-inch pipe line from the field to Iles Junction, where it ties into Stanolind Oil & Gas Company's 4-inch line from Iles field to Craig, Colorado. The Texas Company operates a 1200-barrel refinery at Craig.

Drilling of 15 wells within the next 90 days on tribal lands in the south extension area of the Cut Bank field, Glacier County, Montana, was obligated by several operators who bid in 15 separate tracts at lease sale March 3. The sale netted the Blackfeet Indian tribe $62,243.97 in bonuses. All tracts in the sale were leased, and J. W. Johnson of Shelby, Montana, paid the highest bonus, bidding $101 per acre for Tract No. 6, containing 97.74 acres. Other successful bidders were Bill Burk, Dick Kullberg, A. B. Cobb, W. F. Sanders, James McCourt, K. D. Pardee, R. C. Jeffries, Jack Marshall, Wilfred Nadeau and G. S. Frary. The area just leased is immediately southeast and southwest of recent flowing extension wells to Cut Bank south limits.

New Mexico

Lea County Wildcat Work To Follow Pending Deals

Revival of wildcat activity in remote sections of Lea County is due to accrue within the next several months from numerous deals now on tap. Majority of the projects are destined for the north portion of the county, and all are to be drilled by independents.

Hal Cave and associates have enlisted the aid of nearby lease owners to support a proposed Permian lime test near Pearl, with tentative location assigned to the southwest part of Section 22-19s-35e. Cave and George Etz are negotiating for a test to be drilled on the east border of the county and opposite the northwest corner of Yoakum County, Texas. This block centers upon Section 16-11s-38e, being three miles northeast of A. D. Morton et al's State 1, abandoned in 1930 at 5367 feet after passing up a small show of oil. J. M. Brown et al have lined up adequate cash and acreage contributions to proceed with plans to drill a 5300-foot test near Section 3-16s-35e, six miles west of the Lovington townsite. Major companies have donated acreage and pledged bottom-hole aid for the starting of a test within 30 days on Section 22-17s-35e, between the Maljamar and Vacuum fields.

The Caprock district, centering upon the Chaves-Lea County line, is likewise due for a number of additional tests with interest currently focused upon L. E. Elliott et al's State 1, C NW NE 16-11s-31e. The latter was drilling at 2680 feet in anhydrite and red sand. This wildcat logged top of Yates sand at 1935 feet and the red sandstone marker at 2635 feet with an elevation of 4306 feet. Pure Oil Company, Phillips Petroleum Company and Atlantic Refining Company are supporting the project. Owners of short-term lease blocks have cooperated in formulating drilling blocks to test their holdings since Geo. P. Livermore and Great Western Producers' State 1-D, SE SE 30-12s-32e, Lea County, showed for a small pumper in red sand at 3025 feet last October, thereby giving the Caprock area its first production.

UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
La Fayette County (McKamie)—		
Barnsdall, Cornelius 1, 28-17-13	700	9362
Nevada County (Wildcat)—		
Coker & Grievas, Thompson 2, 35-10-22	•	1407
Ouachita County (Wildcat)—		
J. F. Hughes, Rath & Cartier 1, 35-13-18	•	2500

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (East Coalinga Eocene)—		
Robert S. Lytle, No. 55-7F	2184	7765
Fresno County (Kettleman North Dome)—		
KNDA, No. 72-32J	373	10,690
Kern County (Coles Levee)—		
Richfield, KCL-A 74-29 (pb 9350)	72	9384
Kern County (Richgrove)—		
R. S. Bolling, Quinn 2	•	2359
Kern County (Ten Sections)—		
Shell, KCL A 74-29	2296	8235
Los Angeles County (Inglewood)—		
R. R. Bush Oil Co., Smith 1	1925	8341
Los Angeles County (Long Beach)—		
Apex Pet. Co., Morris 17	100	3199
Los Angeles County (Wilmington)—		
Union Pacific, UP 171	58	3518
Ventura County (Ventura Avenue)—		
Tide Water, VL&W 47	3499	10,180
OLD WELLS DEEPENED		
Los Angeles County (Long Beach)—		
Shell, Stakemiller 4 (otd 2307)	137	4625
Los Angeles County (Wilmington)—		
Richfield, West End 1 (otd 3193)	147	3470

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Clinton County—		
Bartmes et al, Wynn Bros. 1, ne sw nw 1-2n-2w	•	1284
Effingham County—		
J. R. Benson et al, Layson 1, ne nw sw ne 22-6n-5e	240	2513
Hinkle Dr. Co., Townsite 1-A, sw se se nw 22-6n-5e	45	2505
Fayette County—		
L & W Dr. Co., Slone 1, se c ne nw 22-6n-3e	168	2508
Vandenbark, Griffith 5, ne nw se 17-7n-3e	•	1549
Carter, Miller 3, sw sw se 8-7n-3e (pb 1530)	54	1577
Richards 1, sw se sw 1-8n-3e	84	1539
Sherman 4, ne se ne 30-8n-3e	•	1591
Franklin County—		
Shell, CW&F Coal Co. 1, sw se nw se 24-6s-2e	145	2151
Gallatin County—		
Cameron Bros., Jones 2, nw ne se sw 4-8s-8e	•	575
Hamilton County—		
Carter, Friel 4, nw se se 27-5s-6e	50	3059
Ohio, Moore 2, ne se sw 3-6s-6e	601	3072
R. B. Martin, McKemzie 1, nw ne nw 36-6s-7e	•	3295
Marion County—		
Southwestern O&G, Benoist 27, ne nw ne 8-2n-1e	750	2940
Magnolia, Shanafelt 32, nw se sw 29-2n-2e	261	4609
Adams O&G, Merryman 19, se ne sw 21-4n-1e	33	1431
Gulf, Hill 1, sw sw sw 26-4n-1e	396	1369
Schoenfeld, Hunter et al, Hudspeth 1, ne se se se 27-4n-1e	171	1368
Eason Oil Co., Kiest 1, se c se 27-4n-1e	140	1362
Richland County—		
Oil Well Dr. Co., Blain 1, se nw sw 24-4n-9e	19	2598
Pure, Snider 3, nw nw se 6-4n-10e	72	2895
Wachtel-Myers Cons. 1, c w½ se sw 7-4n-10e	57	2980
Wabash County—		
R. Gilster, Goeings 1, se c ne 18-1s-12w (pb 2075)	150	2420
Hall-Jordan, Canedy 1, nwc ne 20-1s-12w	125	2390
Coffman 1, se ne se nw 20-1s-12w (pb 2150)	300	2410
Coursey 1, lot 10, blk 219, 20-1s-12w	120	2077
Roberts, Crumren-Hudson 1, nw sw nw ne 20-1s-12w	408	2450
Roy Powers et al, Strauss 1, c e½ se sw 4-1s-14w	•	3155
Illinois Prod., Brown 1, nw nw se 1-2s-14w	•	2950
Washington County—		
Gulf, Bring 1, sw sw sw 14-1s-1w	173	1554
Wayne County—		
Pure, Elliott 2, nw se se nw 1-1n-7e	12	3068
Garrison 4, w½ nw sw 36-2n-7e	126	3085
Hubble 3, sw se sw 29-2n-8e	126	3095
Hubbell 2, c w½ ne sw 32-2n-8e (pb 2975)	42	3075
C. Robinson, Leech 1, nw sw nw 14-2s-8e	•	3400
Bothwell 1, e½ nw se 25-2s-8e	•	3452
Johnson Bros., Poorman 3, swc ne se 19-3s-8e	110	3240
Texas, Poorman 6, sw ne nw se 19-3s-8e	134	3260
White County—		
Longhorn Oil Co., Helm 8, se nw ne ne 27-3s-14w	100	2897
Buell & Herndon, Bond 8, ne se ne 8-4s-14w	110	2829
Delta Dr. Co., Boltinghouse 2, sw ne nw 16-4s-14w	175	2861
Walter Duncan, Bramlett 1, ne c sw sw 17-4s-14w	484	2289
Ryan Oil, Bramlett 5, ne se sw 17-4s-14w (pb 2592)	•	2605
Superior, Ford 1, nw sw se 28-4s-14w	590	2925
Ford 10, sw sw sw 27-4s-14w	139	2725
Lewis Prod. Co., Morris 1, sw se nw 21-5s-14w	•	3133
Benedum-Trees, Golden 1, nw ne se 29-5s-14w (pb 2830)	13	2834
Skelly, Wilson 1, se nw ne 11-6s-9e	105	2280
Horton et al, Brackley 1, se se nw 32-6s-10e	•	3120
Williamson County—		
Adkins, Old Ben Coal Co. 1-D, se se se 4-8s-2e	•	2771
G. R. Hays, Arnold 1, sw nw nw 32-10s-4e	•	2401
OLD WELLS DEEPENED		
Hamilton County—		
W. C. McBride, York 2, se c ne 34-5s-6e (otd 2957)	171	3050
White County—		
Cherry & Kidd, Calvin 1, sw se ne 8-4s-14w (otd 2713)	230	2824
Florida Oil Co., Boultinghouse 1, nw ne se 9-4s-14w (otd 2724)	•	2956

Indiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Gibson County—		
Oleum Pet. Corp., Bank 1, se se nw 5-2s-8w (pb 1385)	12	1385
Hall Edwards, Rec., Maier 19, c n½ nw se 14-4s-14w	250	2528

Kansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton County—		
Black-Marshall, Weber 1-B, c w½ sw sw 12-16-12w	•	3384
Butler County—		
Ramsey, Joseph 1, nwc se 25-24-3e	75	2727
Cities Service, Wilson 196, se sw nw 9-25-5e	41	2001
Miller 15, nw se sw 2-28-4e	17	2064
Sid Neff, King 1, nw sw ne 2-28-4e	35	2095
Cities Service, Barner 32, se nw ne 17-28-4e	40	2011
Cowley County—		
Brewer, David 3, ne nw ne 2-31-4e	•	3025
Ellis County—		
Champlin, Hadley "D" 5, c n½ sw se 17-11-17w	3000	3382
Cities Service, Collahan "A" 21, se sw ne 24-11-17w	3000	3400

[*Continued on next page*]

•Failures; †Junked; ‡Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended March 15, 1941

	WELLS COMPLETED								*PERMITS FOR NEW WELLS				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	†Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Arkansas	3	1	....	2	....	700	31	42	1	2	28	22	153
California	11	10	....	1	....	10,791	221	223	8	24	175	204	1,042
Colorado	.....	....	....	....	....	.....	2	2	....	.....	....	.....	.....
Illinois	54	37	....	14	3	7,229	599	737	65	203	769	837	4,532
Indiana	2	2	....	....	....	262	88	79	....	.....	....	.....	.....
Kansas	35	24	....	9	2	36,192	394	319	20	92	373	352	2,048
Kentucky	3	....	....	3	....	.....	57	50	....	.....	....	.....	.....
Louisiana	26	18	1	7	....	4,163	292	317	21	73	294	288	1,658
Michigan	14	2	1	11	....	145	164	276	17	200	169	280	1,093
Mississippi	4	3	....	1	....	1,105	29	30	....	.....	....	.....	.....
Missouri*	.....	....	....	....	....	.....	1	1	....	2	2	.....	26
Montana	4	4	....	....	....	866	46	27	....	.....	....	.....	.....
Nebraska*	1	....	....	1	....	.....	22	.....	3	4	17	.....	69
New Mexico	10	8	....	2	....	1,136	71	166	8	29	83	175	559
New York	14	9	1	....	4	55	133	240	....	.....	....	.....	.....
Ohio	6	....	4	2	....	.....	281	200	....	.....	....	.....	.....
Oklahoma	31	15	2	7	7	8,557	401	434	18	86	352	398	1,888
Pennsylvania	46	26	11	4	5	29	424	814	....	.....	....	.....	.....
South Dakota	.....	....	....	....	....	.....	....	1	....	.....	....	.....	.....
Tennessee	.....	....	....	....	....	.....	....	5	....	.....	....	.....	.....
Texas	167	119	6	41	1	61,475	1,802	2,223	292	707	1,914	2,555	11,170
West Virginia	2	1	1	....	....	25	146	140	....	.....	....	106	782
Wyoming	2	2	....	....	....	806	20	32	....	.....	....	.....	1
Total this week	435	281	27	105	22	133,536	5,224	6,358	453	1,422	4,176	5,217	24,842
Total last week	.....	318	35	114	21	152,779	4,789	5,842	384	810	3,723	4,664	24,842
Total this year	5,224	3,314	476	1,230	204	1,636,482	....	.....	....	.....	....	.....	.....

*This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
† Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

United States Well Completions—*Continued*

KANSAS—Continued

Company, Well and Location	Init. Prod. Bbls.	Depth
Deep Rock, Baumer 32, c w½ ne sw 27-11-17w	3000	3565
Gulf et al, Sanders 2, c s½ sw se 30-13-16w	2764	3484
Ellsworth County—		
Continental et al, Kolfs 7, nw ne ne 28-17-8w	309	3242
Texas, Schroeder 4, c s½ se sw 27-16-10w	400	3288
Graham County—		
Gulf, Boller 1, c e ½se se 29-7-22w	*	3901
Ewers & Simpson et al, Bundy 1, c sw sw 12-9-22w	*	3899
Greenwood County—		
Phillips, DeMallorie-Souder 79, nw ne nw 11-22s-10e	117	2159
Rhodes et al, Bays 3, nw se nw se 17-23-13e	*	1862
McPherson County—		
Westgate-Greenland, Bukey 1, c s½ se nw 17-18-1w	*	2888
J. H. Johnson et al, Keefer 1, nw sw sw 25-18-1w	45	2832
Pratt County—		
Skelly, Lakin 3, c e½ ne ne 36-27-11w	634	3504
Rice County—		
Continental, Meyer 7, nw sw sw 30-18-7w	210	3251
Powell 5, ne nw nw 31-18-7w	3000	3230
Bradley, Rolf 1, c n½ nw nw 24-18-10w	*	3303
Transwestern, Rolfs 1, c s½ ne ne 26-18-10w	3000	3221
Murfin et al, Elwell 1, nwc 36-18-10w	*	3312
Hartman, Dresback 1, c e½ se ne 7-21-6w	*	3561
Rooks County—		
Broadview, Beardmore 3, c s½ sw sw 2-9-16w	2584	3241
Russell County—		
Coralena, Phinney 4, c s½ sw ne 30-14-13w	2724	2987
Helmerich & Payne, Boxberger 5, nw c ne 21-14-14w	1905	3108
Leader, Hinderliter 3, se sw nw 33-15-13w	3000	3345
Stafford County—		
Porter, Richards 1, c e½ se sw 10-24-11w	3000	3828
Stanolind, Charles 3, c s½ ne se 15-24-13w	3000	3829
Crawford 2, c e½ sw ne 15-24-12w (pb 3829)	287	3847
OLD WELL DEEPENED		
Marion Coutny—		
Harrington-Hassue, Dienes 1, nec 29-17-4e (otd 2409)	5	2465
SALT WATER DISPOSAL WELL		
Scott County—		
Atlantic, Dague 3, c ne nw 14-20-33w (otd 4910)	...	5603

Kentucky

Company, Well and Location	Init. Prod. Bbls.	Depth
Daviess County—		
A. D. Schaffer, Neeley 1	*	1724
Grayson County—		
Sun Oil, Woods 1	*	3770
Henderson County—		
Joe Minton et al, Rash 1	*	2770

South Louisiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Acadia Parish (South Crowley)—		
Humble, Jeffers 1	¶	8300
Calcasieu Parish (English Bayou)—		
Union Sulphur, Kaufman 10	224	7030
Cameron Parish (Chalkley)—		
Shell, Sweet Lake 4	263	8916
East Baton Rouge Parish (University)—		
Sugarfield, McDodd 4	41	7232
Evangeline Parish (Villa Platte)—		
Continental, Tate 1	198	10,259
J. K. Hughes, Pitre 3	577	10,193
Iberia Parish (Fausee Point)—		
Sun, Pianters 7	*	1818
Iberia Parish (New Iberia)—		
Helis, Bolivar 14	*	1143
LaFourche Parish (Golden Meadows)—		
Frankhos et al, LeBlanc 2	108	5163
Plaquemines Parish (Venice)—		
Tide Water, Johnson 2	336	8204
St. Charles Parish (Lake Salvador)—		
Texas, State 5	504	10,216
St. Charles Parish (Paradis)—		
Texas, LL&E 9	844	10,490
St. Mary Parish (Horseshoe Bayou)—		
Texas, State 5	*	11,335
St. Mary Parish (West Cote Blanche)—		
Texas, State 7	332	9707
St. Mary Parish (Wildcat)—		
Humble, Miami Corp. 1-C	*	11,215
St. Tammany Parish (Wildcat)—		
W. T. Burton, State 5, Lake Ponchartrain	*	7690
Terrebonne Parish (Bay St. Elaine)—		
Texas, State 20	195	7968
Terrebonne Parish (Gibson)—		
Shell, Kuntze 5	192	9520

North Louisiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo Parish (Pine Island)—		
C. M. Bagley, Ober 1, 1-20n-15w	50	1540
Magnolia, Herndon 14, 22-21n-15w	43	1590
M. E. Kemp, Hobbs 1, 28-21n-15w	6	1528
Claiborne Parish (Sugar Creek)—		
Sugar Creek Syndicate, Robinson 3, 32-20n-5w	*	5448
La Salle Parish (Olla)—		
Arkansas Fuel Oil, Kees C-3, 7-10n-3e	50	2222
H. L. Hunt, L. Cent. 83, 30-10n-3e	150	2425
La Salle Parish (Urania)—		
Lion Oil, Goodpine 1, 25-9n-1e	50	1690
Smith et al, Swope 1, 16-9n-1e	*	4008

Michigan

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
G. C. Berlin, Wagner 1 sw sw ne 16-4n-12w	*	1633
L. D. Hendershott, Heasley 1, ne sw se 9-4n-13w	*	1972
Frank S. Vahue, Berens 1, ne nw sw 20-4n-13w	*	1739
William Clock, Graves 1, sw sw sw 16-1n-13w	75	1356
S. L. Conant, Russen 2, nw nw sw 28-1n-13w	*	1360
Branch County—		
McIntire et al, Annis 1, sw se nw 34-5s-8w	*	120
Clare County—		
Sun, McIntosh 1, s½ sw ne 16-19n-3w	*	5400
Kalkaska County—		
Monarch Dev. Co., Iron Co. 2, c nw 21-28n-6w	*	1947
Kent County—		
Freeman Haskin, Nyenhuis 1, se se sw 6-5n-12w	*	1814
Mid-West Ref. Co., Maynard 1, nw sw nw 4-6n-12w	¶3.0	1085
Muskegon County—		
E. B. Strom, Kaule 1, nw nw ne 16-11n-16w	*	1925
Ottawa County—		
John C. Newell, Rapp 2, sw nw se 23-7n-13w	70	1875
Roscommon County—		
Eugene Hilliard, State 1, c n½ nw ne 19-21n-3w	*	4107
Van Buren County—		
Twin Dr. Co., Earl 1, se se nw 24-2s-15w	*	1128

Mississippi

Company, Well and Location	Init. Prod. Bbls.	Depth
Attala County (Wildcat)—		
Clint Crosby, Allen 1, 33-13n-5e	*	4534
Yazoo County (Tinsley Dome)—		
P. J. Ruman, Moore-Robertson 1, 29-10n-2w	670	5140
Union Prod. Co., Carson 1, 25-10n-3w	245	4621
Harris 6, 25-10n-3w	190	5025

Montana

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier County (Cut Bank)		
A. B. Cobb & Co., Tribal 3, se nw 19-32n-5w	192	2792
Glacier Prod. Co., Williams 2, c nw se 21-33n-5w	300	2942
McDonald, Henderson & Overcash, Tribal 1, nw nw nw 29-32n-5w	225	2852
Toole County (Kevin-Sunburst)—		
Ohio Oil, Lind 6, sw se nw 11-35n-2w	149	1633

Nebraska

Company, Well and Location	Init. Prod. Bbls.	Depth
Nemaha County—		
Bow & Arrow Oil Co., Schrieffer 1, c n½ ne sw 20-5n-14e	*	2418

New Mexico

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Ajax Drl. Co., Saunders 1-B, swc 13-17s-27e	*	460
H. A. Haseltine et al, Hastie 5-A, sw nw sw 18-17s-28e	12	532
Peters & Elder, Root 1, c ne se 21-17s-29e	125	2729
Tallmadge & Cowell, State 2, se nw se 2-17s-29e	30	2626
Eddy County (Wildcat)—		
O. F. Featherstone et al, Merchant 1, c ne nw 10-19s-26e	*	1303
Lea County (Maljamar)—		
Carper Dr. Co., Simon 2-B, c sw ne 30-17s-32e	250	3710
Simon 5-N, c ne se 29-17s-32e	125	4250
Barney Cockburn et al, Miller 1-B, c sw nw 23-17s-32e	250	3770
Pearsall 5-A, c nw ne 33-17s-32e	300	4051
Lea County (Skelly)—		
Skelly Oil, Sims 14, c ne ne 4-23-37	44	3680

New York

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Vosburg Oil Co., Green farm, Bolivar	10	1275
South Bolivar Oil Co., McKelvey farm, Bolivar	6	1358
D. V. McCarthy, Wilson farm, Bolivar	4	1340
Bradley Prod. Corp., Duke farm, Alma	5	1476
March Oil Co., Withey farm, Bolivar	5	1423
Clair Oil Co., Carrier farm, Wirt	4	1369
Forest Oil Co., Ackerman farm, Bolivar	7	1363
Max Andrews, Burdick farm, Wirt	6	1374
Sloan & Zook Co., McDivitt farm, Bolivar	8	1420
Belmont Quad. Corp., George Lewis farm, West Union	¶14.0	4987
WATER INTAKE WELLS		
Allegany County—		
South Bolivar Oil Co., McKelvey farm, Bolivar	...	1268
Brothers Oil Co., Crandall farm, Bolivar	...	1340
Bradley Prod. Corp., Duke farm, Alma	...	1443
Ed. McLaughlin, Briggs farm, Willing	...	1152

Ohio

Company, Well and Location	Init. Prod. Bbls.	Depth
Ashland County—		
Ohio Fuel, Gantz 2	¶1.12	2530
Athens County—		
Brooks Johnson, Starlin 1	*	1030
Knox County—		
Ohio Fuel Gas, Smithhisler 1	¶1.9	2787
Medina County—		
East Ohio Gas, White & Jackson 1	*	2540
Morgan County—		
W. S. Harris, Granstaff 1	¶0.32	1020
Tuscarawas County—		
Columbia Carbon, Smith 1	¶1.5	4417

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo County—		
Olsen, Rigney 3, ne se nw 12-5n-9w	¶2.0	3464
Carter County—		
Jones Oil Co., Griffin 4, c n½ nw nw 26-4s-2w	15	2321
Creek County—		
Tilley, Wright 7, sw se ne 17-17n-8e	*	2417
Strozier, House 1, ne sw se 22-17n-11e	50	2528
Kiowa County—		
Shell, Kelsay 2, sw nw sw 20-7n-17w	400	1177
Lincoln County—		
Morgan-Gulf, Rubac 2, c s½ sw nw 2-12n-5e	120	4551
Mid-States, Provaznik "A" 3, nw sw sw 33-12n-6e	135	3305
McIntosh County—		
McNutt & Young, Wolf 1, nwc ne 12-12n-16e	¶4.2	1833
Okfuskee County—		
Reese, Replogle 2, nw ne ne 2-10n-8e	390	3486
Shell, Replogle 7, sw se se 35-11n-8e	175	3484
Replogle 8, nw ne se 35-11n-8e	732	3464
Pioneer, Reinbolt 1, ne nw se 5-11n-10e	*	3696
Phillips, Joney 2, nec 34-12n-8e	408	3699
Seran, Roberts 2, nw se ne 34-12n-8e	300	3670
Okmulgee County—		
Dow, Rentie 2-A, se ne nw sw 13-14n-14e	2	1061
Osage County—		
Marthann, 6, se ne nw 3-28n-11e	15	957
Pottawatomie County—		
O'Connor, Lynn 2, nec nw 28-6n-4e	*	3717
Walter Smith, Wimbs 1, nec 7-7n-4e	374	4007
Gulf, Green 8, nw nw ne se 17-7n-4e	1400	4223
Seminole County—		
Villines, Swan 2, nwc ne 26-7n-5e	*	3096
Hansberger, Wilson 1, swc se 36-9n-6e	*	85
Tillman County—		
Staley, Fee 2, sw se nw 10-2s-19w	*	2100
I. T. I. O., Fillmore 2, c s½ s½ se 36-2s-19w	*	5244
Dickey 6, cwl nw ne nw 1-3s-19w	3305	4991
OLD WELLS DEEPENED		
Carter County—		
Magnolia, Richards 54, nw sw se se 31-3s-3w (otd 1146)	*	1270
Muskogee County—		
Link, Carlin 1-A, cwl nw se nw 19-15n-15e (otd 1516)	*	1879
Okfuskee County—		
Shell, Ramsey 3, nwc 35-12n-8e (otd 3656)	683	3663
Okmulgee County—		
Selby, Flint 15, c ne 26-14n-14e (otd 2307)	*	2645
Osage County—		
Producers Pipe & Supply, 1, nw nw 20-22n-10e (otd 1947)	40	1961

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Pontotoc County—		
L. Walsh, Norman-Fleming 1, nec 13-5n-4e (otd 2581)	*	2752
Pottawatomie County—		
Magnolia, Walker-Hilton 1, swc ne 21-7n-4e (otd 4158) (pb 4175)	13	4313

Pennsylvania

BRADFORD DISTRICT

Messer Oil Corp.	1½	...
Bradford Tr. Co., 18 wells	18	...
Forest Oil Corp.	1	...
Niagara Oil Corp., 3 wells	3	...
Grant & Mohan Oil Co., 3 Bing 486-487	1	...
NEW YORK-PENN GAS FIELD		
Van Gilder, Sherman	*	...
MIDDLE DISTRICT		
M. M. Masters, Gibbs	*	...
Titusville Tr Co & Fleming, lot 3192	⅝	....
BUTLER-ARMSTRONG DISTRICT		
Dow Smith et al, Frank Voltz	3	...
SOUTHWEST DISTRICT		
Armstrong County—		
Pleasant Valley Gas, Stepp 1	¶0.23	2652
Shelocta, Kough 1	¶0.04	4144
Clarion County—		
R. M. Burnham & Co., Cypert Hrs. 2	¶0.05	2443
Fayette County—		
Johnson & Stephenson, Bruno 1	¶0.26	1587
Greene County—		
Greensboro Gas Co., Hopton 1	¶0.09	3118
Donley & Lough, Littman Hrs. 1	¶0.05	3015
Manufacturers Gas, Hughes 1	*	3495
Indiana County—		
T. W. Phillips, Fairman 1	¶0.06	3413
Penrod 1	*	3395
Peoples Nat. Gas, Bates 1	¶0.01	3862
Washington County—		
Carnegie Nat Gas, Nelan Hrs. 1	¶0.42	1952
G. W. Freshwater & Co., Burns 4	¶0.04	1296
Westmoreland County—		
Peoples Gas Co., Hulton 1	¶0.1	3601
WATER INTAKE WELLS		
Bradford District—		
Messer Oil Corp., Redfield	...	...
Forest Oil Corp.	...	...
Forest Pet. Corp.	...	...
Niagara Oil Corp.	...	...
Andrus, Lens & Daggett, Newton	...	...

Texas Panhandle

Carson County—		
Cities Service, Magnolia Pet. Co. 6-F	66	3134
Magnolia, Fee (tr. 244)	14	2965
Skelly Oil, Schafer 114	346	3088
Gray County—		
Adams & McGahay, Morse 9	95	2558
Dolomite Prod. Co., Johnson 1	129	3320
Magnolia, Hood 2	242	3111
Stanolind, Waggoner 11	175	3325
Wilcox O&G Co., Coombs-Worley 48	55	3113
Hutchinson County—		
Cree-Hoover & Dye, Harvey Sisters 7	97	3050
Shell, Harvey Sisters 13	225	3052
Moore County—		
Red Rover Gas Co., Shelton 4-A	¶59.2	2543

Texas Gulf Coast

Brazoria County (Old Ocean)—		
Shell-Tide Water, Reynolds 1	421	10,800
Stanolind, Schantz 1	445	10,933
Brazoria County (Rowan)—		
Humble, Hubbard 4	*	9159
Chambers County (Anahuac)—		
Gulf, Knowles 14	389	7111
Harris County (Fairbanks)—		
Stanolind, Jahnke 10	150	6839
Harris County (Humble)—		
Wilson, Holmes 5	153	1108
Jefferson County (Fannett)—		
Gulf, Burrell 13	*	6791
Jefferson County (Lovell's Lake)—		
Humble, Jeff. Ld. Co. 19	¶	7724
Liberty County (Esperson)—		
General Crude, Esperson 41-A	676	8061
W. P. Luse, Hlavaty 5	¶	7057
Polk County (Segno)—		
Gulf, Wing 44	498	8158
Tyler County (Joe's Lake)—		
Republic Prod'n, Hurd 51	*	7757
Wharton County (Hillje)—		
Rancho Oil, Orsak 1	¶	5237
Wharton County (Magnet)—		
Humble, Cockburn 37	97	5540
Wharton County (Wildcat)—		
Lowrance, Juhl 1	*	6514

North Texas

Archer County (Scotland)—		
Deep Oil Dev. Co.-Christie, Moer 1-B	*	5433
Archer County—		
Pet. Producers Co., King 2	150	1262
Clay County (Wildcat)—		
Carlos Wagner et al, Thaxton 1	*	6133
Clay County (Antelope)—		
Shell, Wright 1 (pb to 3190 ft)	66	3600
Clay County—		
Duncan & Arnhold, Duncan 22	65	1290
Cooke County (Walnut Bend)—		
Sun Oil, Snuggs 11	281	4921
Cooke County—		
Big Indian Oil & Dev. Co., Wiseman 2	*	960
C. & L. Oil Co., Perkins 19	20	778
Dodson & Iglehart, Rosson 5	10	1097
Jack County—		
Panhandle Ref. Co., Leffel-Daugherty 6	20	2963
Paul Steed et al, Derrick 1-A	343	3070
Montague County—		
Claymont Oil Co., Bouldin 7	10	819
Throckmorton County (Wildcat)—		
Humble, Durham 1	*	5196
Wichita County (K-M-A Ellenberger)—		
Fain - McGaha Oil Corp., Griffin 3-B-E	285	4326
Wichita County (K-M-A)—		
H. B. Wallace et al, Logan 4-D-B	688	3793
Wichita County—		
W. E. Production Co., Glass 4	29	1326
Wilbarger County—		
Texas Co., Waggoner Est. 14-D	*	2461
W. T. Waggoner Est., Fee 30-AA	70	1700
Wilbarger County (Consolidated)—		
J. A. Woods et al, Womack 4-A	*	4082
Wise County (Wildcat)—		
Monahan Oil Co., Collier 1	*	6047
Young County (Wildcats)—		
W. R. Stafford et al, Box 1	*	514
E. D. Willis et al, Stewart 1-D	*	1212
Young County—		
M. J. & Lucy Grove, Jones 2	2	540
E. C. Jeffery et al, Hill 5	7	933
Chas. B. King et al, Brown 4	4	554
W. F. Palmer et al, Campbell 12	4	996
Pet. Producers Co., Rogers 4-A	75	913
Hazel Sparks et al, Clark 7	98	893
Wainwright Bros., Rogers 2	*	880

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Company, Well and Location	Init. Prod. Bbls.	Depth
Coleman County—		
Anzac Oil Corp., Burk 2	¶1.0	2269
Eastland County (Wildcat)—		
A. A. Hutton et al, Penn 1	•	571
Hamilton County (Wildcat)—		
Falls Ref. Co., Lund 2	•	3953
Jones County (Wildcat)—		
Fain-McGaha Oil Corp., et al, Moore 1	•	2538
Palo Pinto County—		
Palo Pinto O&G Corp., Marion 7	16	3067
Palo Pinto County (Wildcats)—		
Georgian Corp., Weldon 1	•	2121
Wilcox O&G Co., Rodgers 1	•	3330
Stephens County—		
Aragon Oil Co., Mueller 1	74	3553

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Cochran County (Slaughter)—		
Atlantic Ref. & Ray Rhodes, Dean-Slaughter 1	165	5150
Magnolia, Mallet 3-H	1203	3058
Ector County (Foster)—		
Atlantic Ref. Co., Johnson 1-H	553	4150
Continental Oil, Johnson 5-B	146	4300
Forest Dev. Corp., Moss 5-A	•	4335
Moss 3-H	451	4347
M. B. K. Dr. Co. et al, Gist 5-A	1134	4335
Ector County (Goldsmith)—		
Gulf, Goldsmith 337	1454	4186
Ector County (Jordan)—		
Snowden & McSweeney Co., University 6, tr 2	822	3600
Ector County (North Cowden)—		
Carl B. King et al, Holt-Landreth 2-B	510	4414
Texas Co., Holt 5	179	4420
T. P. Coal & Oil Co., Holt 8	954	4561
Fisher County (Wildcat)—		
F. A. Stephenson et al, Maberry 1	267	3329
Gaines County (Seminole)—		
Amerada, Coffey 4	605	5230
Humble-T. P. Coal & Oil Co., McMurtry 1	681	5305
Magnolia-Atlantic, H. & J. 11-195	411	5240
H. & J. 7-221	227	5255
Ohio Oil, Gibbs 7	598	5319
Tippett 6	633	5284
Gaines County (Wasson)—		
Continental-Amon Carter, Langdon 8-44	1005	5050
Hockley County (Slaughter)—		
Honolulu Oil Corp., Frazier 2	1142	5019
Slaughter 9-78	1635	4995
Magnolia, Slaughter 2	724	4978
Sid Richardson et al, Sue Slaughter 5-B	807	4980
Skelly Oil, McRae 1	817	4965
Howard County—		
FHE Oil Co. et al, Dodge 4	288	2865
Pecos County (Abell)—		
Magnolia, Baldwin-State 1	162	5220
Markey Hrs. 1	500	5401
Pecos County (Shearer)—		
W. H. Street et al, Fromme 5	•	1923
Pecos County (Tobarg)—		
Cardinal Oil Co., Tippett-Kirby 61-E	9	476
Upton County (Gulf-McElroy)—		
Gulf, Crier-McElroy 47	507	2841
Crier-McElroy 49	2137	2892
Ward County—		
Gulf, Hutchings 153	246	2800
O'Brien 158	505	2773
Roeser-Pendleton, Inc., et al, Hayes 1	•	5397
Winkler County (Scarborough)—		
Gulf, Daugherty 75	265	2936
Yoakum County (Wasson)—		
Aloco Oil Co., Miller-Texaco 11-B	1403	5210
Willard-Texaco 11-A	673	5212
Basin States Oil Co., Jordan-Honolulu 5	616	5270
Continental, Stevens 7	822	5073
Denver Prod. & Ref. Co., Whittenburg 13-A	994	5125
Gulf, Moore 3	927	5056
Oil Dev. Co., Willard 1-743	378	5195
Shell, Baumgart 12-B	1473	5184
OLD WELL DEEPENED		
Winkler County (Kermit)—		
Magnolia, Walton 64 (otd 2992 ft)	37	3215

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County (Wildcat)—		
James R. Dougherty, Hicks 7, 1120-ac rt, Jose Marie Uranga gr, 3 mi sw Normana, new fld	150	4178
Brooks County (Kelsey)—		
Magnolia, State-Marshall 3	850	4740
Jackson County (Lolita)—		
Humble, Mitchell	825	5206
Jackson County (West Ranch)—		
Edmont, Ledkins 1	•	5795
Jackson County (Wildcats)—		
Boyle, Mayo, & Wright, Terrell 1, 366.5-ac tr, Wm. Murphy sur, 8 mi nw Edna, 1 mi e Navidad River, new fld	¶100.0 & 50	6125
Norsworthy, Combs 1, 160 ac of sec 32, Morris & Cummings sur, 2 mi s Mauritz	•	6505
L. A. Wagner, Wilbeck 1, 289-ac tr, Heard lge, 3½ mi e Cordele fld	•	3848
Jim Wells County (Wade City)—		
Rodney Delange, McNeill 23	650	4817
Karnes County (Wildcat)—		
H. J. Baker, Yanta 1, 706-ac lse, S. G. Hardaway sur, 3½ mi e Helena	•	2610
Live Oak County (White Creek)—		
P. H. Korges, Loughridge et al 2	•	1615
Nueces County (Agua Dulce)—		
Shield, Schultz 1	900	6528
Nueces County (Bentonville-King)—		
Southern Minerals, Walker 6	500	5652
Nueces County (Clara Driscoll)—		
Earl Fain, Jr., Driscoll 1	250	5970
Wellington, Driscoll 2-D	•	8055
Nueces County (East White Point)—		
Sinclair Prairie, State-Nueces Bay 1(688)	350	6528
Nueces County (Stratton)—		
Bay-Tex, Union Central 6	650	6805
Southern Minerals, Sellers 7	425	6600
Victoria County (Victoria)—		
W. Stewart Boyle, Fox 1, Victoria 4-lge gr, 179.88-ac lse, 3 mi sw Victoria, outpost	•	325
Victoria County (Placedo)—		
Haynes B. Ownby Dr. Co., Marek 2	300	4761

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County (Bridwell)—		
Bridwell, Parr 5	425	4307
Duval County (Hoffman)—		
Cox & Hamon, Cuellar	200	3470
Gilcrease, Salazar 3 (section 3)	250	2635
Duval County (Cedro Hill)—		
Magnolia, Duval Co. Rch. Co. 24 (132)	•	1488
Duval County (Charmousca)—		
Magnolia, Duval Co. Rch. Co. 2(281)	46	1593
Duval County (Wildcats)—		
J. B. Blanchard et al, Parr 1, sur 134, 640-ac tr, 2 mi sw Bridwell fld	•	4400
Henderson Coquat, Garcia 1, 74.58-ac tr 50, 7¾ mi se Realitos	•	6515
Jim Hogg County (Colorado)—		
Humble, King Ranch-Colorado 8-B	500	3017
V. F. Neuhaus, Trevino 5-B	400	2965
Jim Hogg County (Wildcat)—		
Sal Vieja, Pena & Bros 1, blk 45, J. Keoughan subd, 1½ mi ne Patel fld	•	3206
La Salles County (Wildcat)—		
Wm. H. Spice, Reed 1, 80-ac lse, T. Conlan sur 124, 6 mi sw Washburn fld	•	5715
Starr County (Kelsey)—		
Humble, Juarez 2	200	4754
Starr County (Wildcat)—		
T. B. Hoffer et al, Hamilton 1, sur 306, 619.28-ac tr, 3½ mi se Cuevitas fld	•	3695
Webb County (Glen)—		
Interstate Minerals, Lopez 58	88	2188

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bostrop County (Wildcat)—		
Marts & Beaven, Walker 1, 29-ac lse, Geo. Glasscock sur, 4 mi e Elgin	•	2420
Guadalupe County (Darst Creek)—		
John E. Clark, Posey 2	25	2605
Guadalupe County (Elm Creek)—		
Walter L. Marshall et al, Thomas 2	4½	842
Medina County (Wildcat)—		
F. D. Spratt, Haegelin 1, W. E. Henlee sur 116, just s Taylor fld, temp abnd	•	....
Uvalde County (Wildcat)—		
Bernard Eintoss & D. A. Morris et al, Roswell Wardlaw 1, sec 12, Wardlaw subd, 6 mi e Nueces River, 14 mi se Campwood	•	2515
Travis County (Wildcat)—		
J. C. Tittle, Green 1, 80-ac lse, H. Martin sur 65, 2 mi nw Elgin	•	1260

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
A. G. Fullerton et al, Pinkston 3 (3¾-ac)	2000	3652
M. H. McMurrey et al, Pinkston 1 (18/100-ac)	1800	3654
Kilgore Area—		
Champlin & Bass, Watson 10 (23.49-ac)	2400	3608
Thos. Humphrey et al, Spear 25 (20.37-ac)	750	3577
Spear 33 (20.37-ac)	750	3561
Spear 36 (20.37-ac)	750	3582
Spear 37 (20.37-ac)	750	3580
Nioco Oil Co., Knowles 13 (7.16-ac)	600	3589
Longview Area—		
General Crude Oil Co., Fee 4 (7.74-ac)	1500	3489
R. W. McGee et al, Brawley 1 (178.23-ac)	•	3772
Mudge Oil Co., Fee 20-A (104.7-ac)	2400	3725
Shell, Landers 30 (133-ac)	1500	3733
Landers 32 (133-ac)	1500	3794
Stanolind & Falcon Co., Everett 6-B (62.1-ac)	220	3695
Anderson County (Long Lake)—		
Magnolia, Focke 1 (240-ac)	61	5345
Franklin County (Talco)—		
Humble, Rutherford 2	396	4313
Magnolia, Easterling 2	276	4302
Limestone County (Tehuacana)—		
Zephyr Oil Co., Peeples 7	•	2653
Smith County (Chapel Hill)—		
Sun & Shell, Mary Warren 1	125	8240
Wood County (Hawkins)—		
Humble, Dagnell 1	¶3.6	4515

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
Pond Fork O. & G. Co., Fee 7	25	1425
Kanawha County—		
Hays O. & G. Co., Young 1	¶0.85	5081

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Carbon County (Mahoney Dome)—		
Sinclair-Wyoming Oil, Mahoney 4-F, c sw nw 34-26n-88w	766	4410
Sublette County (LaBarge)—		
Texas Co., Government 1-C, sw nw nw 27-27n-113w	40	1127

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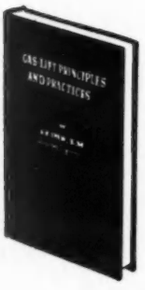

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FIRST REPORT

Taylor County—Pryor & Lockhart & Stanolind O.&G. Co.'s Marr Est. 1, c e½ ne sw 32-68n-33w, dr.

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Ellis County—Crow Dr. Co. et al's Miller 1, c s½ sw sw 17-13-17w, dr.

Russell County—Continental Oil Co.'s Sibrava 1, ne sw nw 34-13-13w, dr.

Woodson County—W. R. Jenner's Hastings 1, c e½ se nw 24-26-13e, spd. Phillips Pet. Co.'s Fidelity 1, sw nw ne 4-26-15e, dr.

COMPLETIONS

Cowley County—Sinclair Prairie's Gibson 1, sec nw 29-34-3e, 1½ mi sw Gueda Springs pool, new pool, Topeka 1515 ft, Lansing 2186 ft, Kansas City 2645 ft, Bartlesville sd 3360 ft, oil 3367 ft, base Bartlesville sd 3376 ft, td 3378 ft, shot 40 qts 3367-76 ft, 90 bbls, 35-gr.

Greenwood County—Ward McGinnis et al's Sharp 1, c sw sw 9-28-12e, 5 mi e Severy pool, top Mississippi 1620 ft, base Mississippi 1905 ft, Arbuckle 1936-38 ft, sulphur water 1983 ft, abnd 1990 ft.

Pratt County—Stanolind's Hartsell 1, c e½ nw ne 3-26-12w, 3 mi se Bonham pool, Anhydrite 688 ft, Topeka 3090 ft, Lansing 3610 ft, base Kansas City 3920 ft, Mississippi 4060 ft, Kinderhook 4080 ft, Viola 4135 ft, Simpson shale 4155 ft, Simpson sd 4175 ft, Arbuckle 4242 ft, abnd 4260 ft.

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Terrebonne Parish—Barnsdall's State 1, Point Au Fer, offshore in sec 11-21s-11e, lcn 11,000-ft test.

Vermilion Parish—Cities Service's Homeseeker's Dev. Co. 1, sec 11-11s-1e, s of Crowley, mim.

COMPLETIONS

St. Mary Parish—Humble's Miami Corp 1, Cypremort pros, sec 15-15s-6e, abnd 11,215 ft.

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Missaukee County—Walter Heintz's McCoy 1, c w sw nw 2-21n-6w, rig.

COMPLETIONS

Allegan County—C. G. Berlin's Wagner 1, sw sw ne 16-4n-12w, Traverse 1624 ft, abnd 1633 ft.

Branch County—McIntire et al's Annis 1, sw se nw 34-5s-8w, abnd 120 ft.

Clare County—Sun's McIntosh 1, c s½ sw ne 16-19n-3w, Dundee 3818 ft, Monroe 3901 ft, Salt 4190 ft, Sylvania sand 5370 ft, abnd 5400 ft.

Kalkaska County—Monarch Dev. Co.'s Iron Co. 2, c nw 21-28n-6w, abnd 1947 ft.

Kent County—Freeman Haskin's Nyenhuis 1, se se sw 6-5n-12w, Traverse 1764 ft, abnd 1814 ft.

Roscommon County—Eugene Hilliard's State 1, c n nw ne 19-21n-3w, Dundee 3941 ft, sc 4047 ft, abnd 4107 ft.

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Attala County—Clint Crosby's Allen 1, sw sw 33-13n-5e, elev 290 ft, chalk 2969 ft, abnd 4334 ft.

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Dawson County—Phillips Pet. Co.'s Brugger 1, c nw se 21-10n-22w, mim.

Gage County—Walt. Rider et al's Warren 1, c ne ne 21-3n-5e, rur.

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Toole County — Dunkirk - Adventure's McKenchie, c se se 2-31n-1w, dr 306 ft.

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OKLAHOMA

FIRST REPORTS

Creek County—Bryan Pet. Co.'s Corbray 1, nec nw 34-19n-9e, dr.

Logan County—J. E. Jones et al's Bassermann 1, se ne se 22-15n-3w, mirt.

Okfuskee County—Alma et al's Replogle 1, nw sw nw 14-10n-11e, dr. Bryan Pet. Co.'s Wisey 1, ne se se 5-11n-8e, mirt. Texas Co.'s Butcher 1, se sw ne sw 15-12n-9e, mim.

COMPLETIONS

Hughes County—Magnolia Pet. Co.'s McKoy 1, swc se 16-5n-11e, 7 mi e Calvin pool, new pool, Cromwell 5373 ft, td 7025 ft in Wilcox sd, pb 5424 ft, perf 40 shots 5360-5405 ft, 2-in tbg 5393 ft, 10,750,000 ft gas, 2100 pounds rp.

Kay County—National Union O. & G. Co.'s Long 1, nwc 29-28n-1e, new horizon in Dilworth gas area, otd 1670 ft, sd 1772-85 ft, Stalnaker sd 2260-2345 ft, sdy ll 2700 ft, Wilcox 3372 ft, td 3377½ ft, 83 bbls. Continental Oil et al's Cronan 1, nw ne sw 23-28n-3e, n of Mervine pool, Big ll 2760 ft, Oswego 2830 ft, Skinner 2955 ft, Mississippi Chert 3126 ft, abnd 3176 ft.

Seminole County—Weldon Hall et al's Jackson 1-A, c n½ ne se 14-7n-7e, 2 mi sw Wewoka pool, new pool, Booch 3168 ft, shot 40 qts 3168-92 ft, td 3192 ft, 44 bbls.

EAST TEXAS

FIRST REPORT

Anderson County—Griffith Bros. and Elbert Williams' Anderson & Clayton Cotton Co. 1, SEc 58.8-ac tr, Wm. Frost sur, 2 mi w Elkhart, rur.

Marion County—M. D. K. Fitzwater's Moseley 1, mat.

WEST TEXAS

FIRST REPORT

Borden County—B. C. Mann-J. R. Canning et al's Canning & Dennis 1, c nw ne H&TC sec 151, blk 25, mach.

COMPLETION

Fisher County—F. A. Stephenson et al's Maberry 1, c se sw HT&B sec 56, blk 1, elev 1937 ft, new pool, lime pay 3298-3315 ft, td 329 ft, pb to 3315 ft, shot 40 qts nitro 3277-94 ft, pump 111½ bbls oils 10 hrs.

NORTH TEXAS

FIRST REPORTS

Archer County—E. P. Bowen et al's Portwood 1, se c ne 40 acres TE&L sec 1587, lcn. W. T. Hutcheson, Jr. et al's Wilson 1-B, near c nw¼ Wm. Walker sur A-660, lcn. Burna Pet. Co.'s Lemmon 1, nw blk 3, Wm. Ainesworth sur A-1, dr 530 ft.

Baylor County—Amerada Pet. Corp's Upshur County School Lands 1, Upshur CSL sur A-7, cellar and pits for deep test.

Montague County—Seitz-Comegys & Seitz's Ritchey 1, nec s½ blk 66, M. Garnett sur A-290, 1½ mi se Belcherville, mim.

Wilbarger County—S. S. Kouri & W. B. Omohundro's K. Kelley 1, swc H&TC sec 54, blk 13, 2½ mi n Harrold, lcn 4000-ft test.

COMPLETIONS

Clay County—Carlos Wagner et al's Thaxton 1, nwc of east 360½ ac tr, T&NO sec 3, Bend 5919 ft, abnd 6133 ft.

Throckmorton County—Humble's Durham 1, nwc TE&L sec 1627, Caddo 4182 ft, Mississippian 4949 ft, Ellenberger 5005 ft, abnd 5196 ft.

Wise County—Manahan Oil Co.'s Collier 1, west corner 46 ac tr, J. M. Wade sur, Bend 5533 ft, abnd 6047 ft.

Young County—W. R. Stafford et al's Box 1, sw se TE&L sec 1911, Gunsight lime 489-90 ft, abnd 514 ft. E. D. Willis et al's Stewart 1-D, David Dawson sur A-76, abnd 1212 ft.

TEXAS GULF COAST

FIRST REPORTS

Fort Bend County—Mayo & Hammel's Armstrong 1, Needville area, lcn 6500-ft test.

Harris County—Pure's Chase Nat Bank, Jno. Sellers Lge, 2½ mi se Huffman, lcn 550-ft test.

Wharton County—W. R. Davis' Hartman 1, 3 mi n El Campo, I&GN A-247, lcn 6500-ft test.

COMPLETION

Wharton County—Lowrance's Juhl 1, 3 mi s Danevang, BS&F RR Sec 15, abnd 6514 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Brown County—G. G. Goss et al's Crownover 1, SEc of BBB&C sec 26, lcn for 3000-ft test.

Hamilton County—Groover-Rose et al's Fuqua 1, south part 500-ac lse, J. W. Bowers sur, sp.

Shackelford County—Stewart & Echert's Gray 1, sw ne nw University Lands sec 84, lcn.

COMPLETIONS

Eastland County—A. A. Hutton et al's Wm. Penn 1, nw se BBB&C Ry. sec 11, blk 2, abnd 571 ft.

Hamilton County—Falls Ref. Co.'s Lund 2, c s½ of east 20 acres of n½ of sw¼ P. J. Bailey sur 51, Marble Falls lime 3245 ft, Ellenberger 3853 ft, abnd 3953 ft.

Palo Pinto County—Georgian Corp.'s Weldon 1, A. J. Smith sur No. 393, abnd 2121 ft. Wilcox O&G Co.'s Rodgers 1, TE&L sec 894, abnd 3330 ft.

Jones County—Fain-McGaha Oil Corp. et al's Moore 1, se part of south 107 acres, T. O. Maltby sur, elev 1671 ft, Camp Colorado 1868 ft, free oil in Hope sand 2213-19 ft, abnd 2538 ft.

SOUTH TEXAS

FIRST REPORTS

Bastrop County—Marts & Beaven, Inc.'s Walker 2, 29-ac lse, Geo. Glasscock sur, sw 1, 3300-ft test, co rig, dr below 2300 ft.

Bee County—W. C. McBride, Inc. & W. Earl Rowe's Faktor 1, Faktor tr, G. Garcia gr, 80-ac lse, 2 mi n Tynan, Gorman-Yoakam Dr. Co. cont, ru.

Duval County—L. A. Douglas & Cartter Rubsaman Dr. Co.'s Driscoll 1, se ¼ ne¼ sec 61, Santa Rosalia gr, 1320 ft n Driscoll 1-C, dry hole, 16 mi nw Benavides, 2350 ft test, lcn.

Jim Wells County — Magnolia's Seeligson Unit 4, sec 68, cntr of comb lots 51 and 64, sec 68, R. P. Haldeman subd of Seeligson ranch, 1081.21-ac lse, 6700-ft test, cor rig, lcn.

Jackson County—Humble's Bennett 1, 307-ac lse, A. M. Clare lge, ab 12, 5250-ft test, co rig, lcn. Humble's Strauss 1, 532.5-ac lse, A. M. Clare lge, ab 12, ¾ mi se LaWard prod, 5250-ft test, co rig, lcn.

Victoria County—J. Newton Rayzor's Mary 1, 210-ac tr, B. Simmons sur on 2100-ac blk, e Victoria, 5000-ft test, Loffland Bros, cont, ru.

COMPLETIONS

Bastrop County—Marts & Beaven's Walker, 29-ac lse, Geo. Glasscock sur, 4 mi e Elgin Navarro 1135 ft, abnd 2420 ft.

Bee County—James R. Dougherty's Hicks 7, 1120-ac tr, Jose Maria Uranga gr, 3 mi sw Normana, 2 bbls hr, 3/32-in ch, 1000 lbs tp, 1150 lbs cp, 48-ga, td 4178 ft, new fld.

Duval County—J. B. Blanchard et al's Parr 1, sur 134, 640-ac lse, 2 mi sw Bridwell fld, abnd 4400 ft. Henderson Coquat's Garcia 1, 74.58-ac tr 50, Phillips Dr. Co.'s O&G lse, 7¾ mi se Realitos, abnd 6515 ft.

Jackson County—Boyle, Mayo & Wright's Terrell 1, 366.5-ac tr, Murphy sur, 1 mi e Navidad River, 8 mi nw Edna, shut in est 100-000,000 ft gas per day open flow on 9/64-in ch, spray dist, 1650 lbs tp, 1300 lbs cp, 3786-93 ft, td 6025 ft, new fld. Norsworthy Prod. Co.'s Combs 1, s 160 ac of sec 32, Morris & Cummings sur, 2 mi s Mauritz, abnd 6505 ft. L. A. Wagner's Wilbeck 1, 289-ac tr, Heard lge, 3½ mi e Cordele fld, 11 mi ne Edna, abnd 3848 ft.

Jim Hogg County—Sal Vieja Oil Co.'s Pena & Bros. 1, blk 45, J. Keoughan subd of sh 4, El Peyote gr, 1½ mi ne Patel fld, abnd 3206 ft.

Karnes County—H. J. Baker's Yanta 1, 706-ac lse, S. G. Hardaway sur, 3½ mi e Helena, abnd 2610 ft.

La Salle County—Wm. H. Spice's Reed 1, 80-ac lse, T. Conlan sur 124, 12 mi s Los Angeles, 6 mi sw Washburn fld, abnd 5715 ft.

Medina County—F. D. Spratt's Haegelin 1, W. E. Henle sur 116, just s Taylor fld, temp abnd.

Starr County—T. B. Hoffer et al's Hamilton 1, sur 306, 691.28-ac tr, 3½ mi se Cuevitas fld, Sun farmout, abnd 3695 ft.

Travis County—J. C. Tittle's Green 1, 80-ac lse, H. Martin sur 65, 2 mi nw Elgin, abnd 1260 ft.

Uvalde County—Bernand Eintoss & D. A. Morris et al's Wardlaw 1, nw¼, sec 12, Wardlaw subd, sur 926, 6 mi e Nueces River, abnd 2515 ft.

Victoria County—W. Stewart Boyle's Fox 1, n 40 ac of blks D & E, on w side of Guadalupe River in Victoria 4 lge gr, 3 mi sw Victoria, abnd 3325 ft.

Duval County Spacing

Continental Oil Company has requested standard 10-acre spacing for wells drilled in the Conoco Driscoll field, Duval County. While most of the production is found in the upper Government Wells sand, there are nine producing horizons in the field.

At a hearing before the Texas Railroad Commission last week, the company said about 2 million barrels of oil has been produced from the field from 56 wells, of which 40 are producing from the upper Government Wells formation. The program submitted included straight per-well proration. The company asked for a minimum of 350 feet of surface casing set with 350 sacks of cement.

MEN IN THE INDUSTRY'S NEWS

BRAD MILLS resigned last week as associate editor of THE OIL WEEKLY to become executive secretary of the American Association of Oilwell Drilling Contractors. He entered Tulane University in 1918, but his studies were interrupted by the World War. He later took special work at Arkansas State College. He entered the oil industry in 1920 in Wyoming's Salt Creek field; was employed in the royalty and production department of New York Oil Company from 1921 to 1927, dividing his time between field and office work. He joined THE OIL WEEKLY in May, 1927, and spent 6½ years as California staff representative. He was transferred to Houston as associate editor in October, 1933, and in the past 7½ years has filled feature assignments in most of the principal fields of the country. Mills will make his headquarters at the association's office in Dallas.

JOHN ASBURY resigned as Eastern division chief scout for Shell Oil Company to accept a position as special representative for Smith Petroleum Company, Chester, West Virginia. He has been stationed at Centralia since he was transferred there from Shell Oil Company's Michigan office in the early days of the Centralia boom. He has been in the employ of the firm for 12 years, and formerly was connected with Marland Oil Company. His successor has not been named.

E. O. BENNETT, chief petroleum engineer for Continental Oil Company, Ponca City, Oklahoma, discussed "Current Practices in Pressure Maintenance" before the Petroleum Engineers Club of Dallas, March 10. He illustrated his discussion with motion pictures and slides of cycling and pressure-maintenance plants.

J. F. NAGLE, former executive assistant to the president and executive vice president of Skelly Oil Company, Tulsa, has been named a member of the marketing department at Kansas City. He will be succeeded by Robert F. Pielsticker, former crude oil purchaser at Wichita.

GEORGE W. WALTON, who resigned recently as vice president and sales manager of Emsco Derrick & Equipment Company after being connected with the company for 15 years, has been named sales manager of Unit Rig & Equipment Company, Tulsa. Before affiliating with Emsco Derrick & Equipment Company, he was connected with Wilson-Snyder Manufacturing Company and for five years was with The National Supply Company, two years of which were spent in Europe. He received his early education in Texas, and later attended the Missouri School of Mines. He will establish his residence in Tulsa.

PAUL L. LYONS, chief scout for Stanolind Oil & Gas Company, has been named president of the Tulsa Chief Scouts Group to succeed Paul Potter, Shell Oil Company. R. B. Curran, The Carter Oil Company, was named vice president, and Sam Baird, Mid-Continent Petroleum Corporation, was renamed secretary.

WILLIAM N. FINNEGAN, JR., whose resignation as assistant to the president of Humble Oil & Refining Company, was announced two weeks ago, was honored during a dinner given March 15 by fellow employes and friends.

G. F. MAHAN, former vice president of The National Supply Company at Independence, Kansas, died March 11 at his home in Toledo, Ohio.

L. R. LOUDEN, professor of geology at the University of Tulsa, and Arthur Browsher, student at the university, will discuss "The Mississippi Formation of the Sacramento Mountains of New Mexico" before the Tulsa Geological Society March 17 at 8 p. m. at Kendall Hall.

JOHN E. KIRKPATRICK, vice president and treasurer of Allied Steel Products Corporation, Tulsa, has been ordered to return to active duty with the Navy. He will report to the USS North Carolina at New York on April 1.

M. C. BOWSKY, engineer for Lane-Wells Company, addressed the Houston Engineers Club last week on "Rocks Talk and Tell All."

STEVEN J. ROTONDI, Mount Pleasant, Texas, operator and co-owner of the first oil producer in the townsite of the Hawkins field, East Texas, died March 12 in a Dallas hospital.

CHARLES R. SWANK, 59, who retired last January as superintendent of the Shreveport division of Magnolia Pipe Line Company, was fatally injured March 12 when his car struck a train at a grade crossing in Shreveport. A native of West Virginia, he came to Texas in 1902 during the Spindletop boom. At various times, he was associated with the George A. Burt interests, Standard Oil Company, and joined Magnolia Pipe Line Company in 1926.

A. E. BATESON, who until a year ago was manager of purchases for Allis-Chalmers Manufacturing Company, Milwaukee, has retired after completing 50 years of service with the company. He was born in England and came to this country at the age of four. In 1891, he entered the employ of the purchasing department of Fraser & Chalmers, Chicago, which was consolidated with E. P. Allis Company in 1901 to form Allis-Chalmers Company. He was succeeded in January, 1940, by F. E. Haker, who at that time was appointed manager of all the company's purchasing activities.

WILLIAM H. STRANG, Gulf Coast editor of THE OIL WEEKLY, has been called to active Army duty with the Second Ordnance Company, Fort Sam Houston, Texas. Strang was educated in petroleum engineering at Colorado School of Mines and the University of Oklahoma, joining Continental Oil Company as assistant to the proration engineer at Ponca City, Oklahoma, upon graduation in 1938. In January, 1939, he joined the editorial staff of THE OIL WEEKLY.

DR. F. B. PLUMMER, geologist with the bureau of economic geology, University of Texas, discussed "New Light on the Geology and Structure of the Llano Uplift and Structure of Central Texas," before the monthly technical session of the Oklahoma City Geological Society on March 10.

JOHN REDMAN, engineer for Shell Oil Company, has been transferred from Tulsa to Pampa, Texas.

VIC E. BAUM, superintendent for Ryan Consolidated Petroleum Corporation, has been transferred from the Kansas district to Dallas headquarters.

J. I. STALEY, 52, president of the Staley Oil Company and a veteran North Texas operator, died March 12, of a heart ailment at his Wichita Falls residence. He was a native of Mills County, Texas, and made his entry into the oil business while engaged as a banker at Burkburnett.

R. A. WILSON, Midland, Texas, has been designated as manager of Texas operations of Southern California Petroleum Corporation, which maintains headquarters at Los Angeles.

STEWART J. HIERONYMUS, with Cutler-Hammer, Inc., for 12 years, has been appointed sales engineer at San Francisco for The Lincoln Electric Company, Cleveland.

G. H. COLLINGWOOD, landman for Lario Oil Company, Wichita, visited former oil company acquaintances in Fort Worth and San Antonio last week.

C. L. ROBINSON, district petroleum engineer for Gulf Oil Corporation, has has been elected president of the Fort Worth Petroleum Engineers' Club, succeeding George H. Card, Stanolind Oil & Gas Company. John A. Wilmot, The Texas Company, is executive vice president and chairman of the membership committee; Robert W. Tesch, Jr., Stanolind Oil & Gas Company, and S. H. Casteel, Landreth Production Corporation, are

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first and second vice presidents, respectively, and G. Ellis Oller, Jr., Parkersburg Rig & Reel Company, is secretary treasurer.

H. L. RIGGS, cable-tool drilling superintendent for Lupher Drilling Company, has been transferred from Mt. Pleasant to Salem, Illinois.

C. R. ALLEN is in charge of production in Continental Oil Company's Indiana production office, which last week was moved from Princeton to 606 Division Street, Evansville.

M. L. ATKINSON, production superintendent for Phillips Petroleum Company, in West Texas, has been appointed chairman of the Little International Oil Show to be held at Odessa June 21-22.

DR. H. B. STENZEL, geological department of University of Texas, addressed the Tulsa Geological Society on March 3 on "The Surface Relationship of the Carrizo Sand of Texas."

DAN ELAM, engineer for Halliburton Oil Well Cementing Company, discussed "Fluid Level Measurements" before the Fort Worth Geological Society on March 3.

VIRGIL O. HARRIS, district petroleum engineer for Humble Oil & Refining Company at Gladewater, has been transferred to the Hawkins district.

HAROLD F. FARNHAM, Baroid Sales Division, Houston, discussed "How the Use of Improper Mud Can Cause Blow Outs of Drilling Wells" before the March meeting of the East Texas Section, American Institute of Mining & Metallurgical Engineers. M. M. Kinley, Oil Well Fire Extinguisher Company, Houston, spoke on "Fighting of Blow Outs and Oil Well Fires."

EDWIN H. WENBERG and A. A. Fitch have joined the aero-geological department of Seismograph Service Corporation, Tulsa, as aerial photographic interpreters. Wenberg, a graduate of the University of Iowa, obtained his Ph.D. in geology. Fitch was formerly geologist with Shell in South America. He is a 1928 graduate of the Royal School of Mines, London, England, and from 1928-1930 engaged in geologic research to obtain his Ph.D. degree. Fitch engaged in research at the University of California from 1930-1933; was a mining geologist for Gold Coast Selection Trust, Ltd., from 1933-35, and was chief geologist for Kenya Consolidated Gold Field, Ltd., from 1935-37.

A. A. Fitch

E. H. Wenberg

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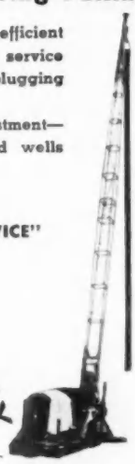

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W. F. ROCKWELL, JR., vice president of Pittsburgh Equitable Meter Company, is representing his company on an "industrial exploration tour" of six South American countries, scheduled to start March 17 and extend to April 30 and arranged by the National Research Council in cooperation with the Inter-American Development Commission. The party will tour Colombia, Peru, Chile, Argentina, Uruguay and Brazil, and on its return will submit a report on industrialization possibilities to the Department of Commerce, the Inter-American Development Commission and other interested government departments and agencies.

J. C. HUNTER, Texas member of the Interstate Oil Compact Commission, has been named by Governor Leon C. Phillips, commission chairman, as head of a three-member committee to appear before the Cole subcommittee in Washington next week. Other members are Hiram M. Dow, of New Mexico, and Andrew F. Schoeppel, Kansas. They will be afforded an opportunity to report on activities of the compact.

H. R. CULLEN, Houston operator, last week reviewed the 300 members of the Seventh Battalion, Texas Defense Guard, when it drilled for the first time in new khaki uniforms he supplied. The group is one of 30 organized to replace the Texas National Guard.

BAILEY B. BAXTER, Paul M. Pope, Jr., and Willard Parkhurst last week organized Zenith Oil Corporation with a Texas charter and headquarters in Dallas.

S. F. SHAW, San Antonio gas lift specialist, last week addressed the Fort Worth Geological Society on "Factors that Influence the Choice of Gas Lift for Producing Oil."

WILLIAM W. TARBELL, 80, one of the organizers of The Pure Oil Company and at one time its treasurer, died March 12 in Bridgeport, Connecticut. After severing his connection with the company, he spent a year in South America doing research work for Gulf Oil Corporation. He retired in 1918.

PAUL WEAVER, Gulf Oil Corporation, Houston, recently gave a paper on "The Salt of the Jurassic of South Arkansas and Its Relation to the Salt Domes of Louisiana, Mississippi and Texas" before the South Louisiana Geological Society.

EDWARD WILLIAM HAMMOND, 56, operator for 25 years before his retirement in 1939, died at his home in Houston last week. He had operated principally in East Texas, Oklahoma and South America.

L. C. CHAMBERLAIN, JR., of the research laboratory of Dowell Incorporated, Midland, Michigan, discussed "Recent Developments in the Chemical Treatment of Wells" before the Illinois Geological Society last week.

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Squeaks from the Bull Wheel

Don't Need It Now

"Wanna buy an engagement ring?"

"Wasser matter, yer girl throw ya over?"

"Naw, we got married."

He Found Out

"Don't you know that you can't sell insurance in this town without a license?"

"Dat splains de mattah. I done fou' out dat I couldn't sell none, but I didn't know whuts de reezin wuz ontil you tole me."

One of the First Families

"I have been on this train seven years," proudly said the conductor of a slowly moving train.

Passenger: "Is that so? Where did you get on?"

Too Long to Wait

"What inspired the old-time pioneers to set forth in their covered wagons?"

"Well, maybe they didn't want to wait about 30 years for a train."

Borrower and Lender

Mark Twain once asked a neighbor if he might read a set of his books. The neighbor replied ungraciously that he was welcome to read them in his library, but he had a rule never to let a book leave the house. Some weeks later the same neighbor sent over to ask for the loan of his lawn mower.

"I shall be very glad to loan you my lawn mower," said Mark Twain, "but since I made it a rule never to let it leave my lawn, you will be obliged to use it there."

Cads!

Attractive Cashier to Manager: "I want a week off to preserve my health. I think my beauty is fading."

Manager: "What makes you think that way?"

A. C.: "The men are beginning to count their change."

The Elusive Male

"What are you doing here?"

"Looking for a husband."

"But you've got one!"

"That's the one I'm looking for."

Undisputed Passage

"My son wants to be a racing motorist. What shall I do?"

"I wouldn't stand in his way."

Literal

Sonny, go over and find out how old Mrs. Harris is this morning.

She says today she's 73 years, six months and two days.

Playing Safe

"I suppose you want a commission."

"No, thanks, I'm such a poor shot I'd rather work on a straight salary."

Praise for Deceased

"Dolan was a fine man."

"He was that. Honest, hardworkin', good to his family."

"He was generous too."

"I never knew that. How do you mean, he was generous?"

"Well, once some of the boys and I were in a bar an' Dolan came in and said, 'Well, boys, what are we going to have . . . rain or snow?'"

The Let-Down

For months he had been her devoted admirer. Now, at long last, he had collected up sufficient courage to ask her the most momentous of all questions.

"There are quite a lot of advantages in being a bachelor," he began, "but there comes a time when one longs for the companionship of another being—a being who will regard one as perfect, as an idol; whom one can treat as one's absolute property; who will be kind and faithful when times are hard; who will share one's joys and sorrows—"

To his delight he saw a sympathetic gleam in her eyes. Then she nodded in agreement.

"So you're thinking of buying a dog?" she said. "I think it's a fine idea. Do let me help you choose one!"

Believes in Signs

Why are you late?

Well, a sign down here——.

Well, what has a sign got to do with it?

The sign said: "School ahead; go slow."

Backfire

"Don't you think," said the host, "that your wife and the rest of your family will want you to be with them as the New Year comes in?"

"Man," replied the guest, "I believe you're right. It's real thoughtful of you. I'll send for them."

Doubtful Character

Remember that cheese you sold me yesterday?

Yes, madam.

Did you say it was imported or deported from Switzerland?

Very Peculiar

While examining a class in grammar the inspector wrote a sentence on the blackboard and asked if any boy could see anything peculiar about it.

After a long pause, one small boy put up his hand slowly.

"Yes," said the inspector encouragingly, "what do you see remarkable about it?"

"Please, sir, the bad writing, sir," replied the youngster.

Hot Stuff

"Why, dearie, the boys run after my kisses."

"So what? After mine they limp."

Day Dreamer

My wife had a funny dream last night. She dreamt she was married to a millionaire.

You're lucky. My wife has dreams like that in the daytime.

In Training

The vicar was paying a visit to the houses of his poorer parishioners, and in one of the houses he asked a good many questions about the family. A very grubby but very cheerful little boy attracted the kindly cleric's attention, and he asked him his name.

"Reginald d'Arcy Smif, sir," replied the boy, with a grin.

The vicar turned to the boy's father. "What made you give the boy a name like that?" he asked.

"'Cause I want 'im to be a professional boxer," returned the parent, "an' with a name like that he'll get plenty o' practice at school."

Gotkool
WATER CANS
& COOLERS
Gott
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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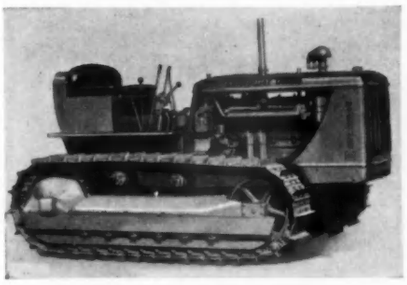
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

NOTES FOR THE Equipment Buyer and User

Diesel Tractor

CATERPILLAR TRACTOR COMPANY

A 55-horsepower diesel tractor, designated Model D-6 and designed with nine working speeds, has been announced by Caterpillar Tractor Company, Peoria, Illinois. Five speeds are forward, offering a range of from 1.4



Caterpillar's D-6 Diesel Tractor

to 5.8 miles an hour, with a corresponding but slightly higher reverse for each of the first four forward speeds. An optional transmission group, giving speeds spaced from 1.7 to 5.3 miles an hour, is available.

The tractor employs welded steel construction, and frame and steering clutch case are welded and built into a one-piece unit.

Power plant is a 6-cylinder water-cooled diesel engine with a bore and stroke of 4¼ x 5½ inches, and full load governed revolutions per minute of 1400. Engine is sealed against dust and dirt, and has only two working adjustments, fan belt and valve clearance. Fuel and lubricating oil are filtered through absorbent type cotton filter elements. Nos. 2 and 3 furnace oils can be used as fuel.

Cylinder liners, crankshaft journals, track roller shafts and rims, and other parts are given an induction hardening treatment.

A separate control unit is employed in steering with hydraulic pressure, requiring 14 pounds of pull on the steering and clutch levers.

Nickel Alloys

The International Nickel Company, 67 Wall Street, New York, has issued a 1941 edition of Technical Bulletin T-7, giving revised information on mechanical properties of Inconel at ordinary and elevated temperatures. Sections on working properties and corrosion resistance have been revised in accordance with latest mill and field experiences, and included are curves for approximate conversions for Brinell, Rockwell and Vicker's hardnesses. A table summarizes mechanical property ranges of standard products.

Recording Thermometer

THE BRISTOL COMPANY

Two recording thermometers of the liquid-filled type, designated case-compensated class 1 recording thermometer and fully-compensated class 1 recording thermometer, have been announced by The Bristol Company, Waterbury, Connecticut.

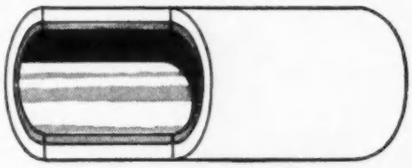
The case-compensated instrument is offered in temperature ranges up to 400° F. and tubing lengths up to 10 feet or longer, depending upon conditions surrounding the installation. The fully-compensated thermometer may be had in ranges up to 400° F. and equipped with 200 feet or less of connecting tubing between the instrument and the bulb.

Duplex Tubing

BRIDGEPORT BRASS COMPANY

A duplex tubing, designed for heat exchanger tubes or piping subjected to two different types of corrosive attack, has been announced by Bridgeport Brass Company, Bridgeport, Connecticut.

The tubing is available in a combination of metals to meet specific conditions, and in processing a close contact is obtained to prevent serious interference with heat transfer.

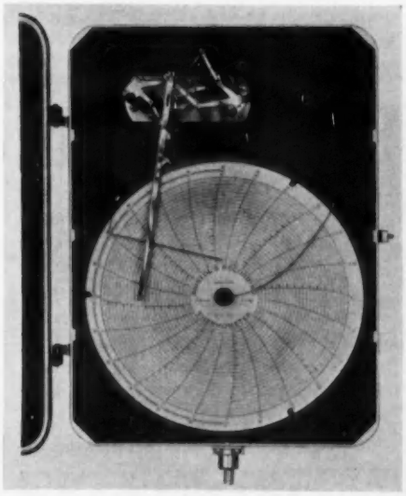


Bridgeport's Duplex Tubing

Where tubes have to be expanded or rolled into a tube sheet, they may be obtained with annealed or tempered ends suitable for this operation. The tubing is available in sizes up to and including 2-inch outside diameter.

Compressors

Norwalk Company, South Norwalk, Connecticut, has issued Bulletin 37 describing its line of multi-stage high-pressure air and gas compressors. It describes various standard types and special service units, and illustrates construction features.

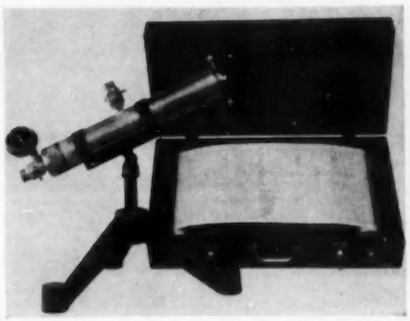


Bristol's Recording Thermometer

Mud Tester

I. F. BINGHAM

An instrument designed to aid in controlled production of rotary drilling mud, designated the Bingham Mud Gasometer, has been announced for use on a rental basis by I. F. Bingham, 1630 Holman, Houston. It determines



Bingham Mud Gasometer

directly the volumetric percentage of gases in the drilling mud, and a continuous 30-day roll chart is used in recording from hour to hour the measurable characteristics of the mud during drilling.

In operation, the instrument is mounted on an adjustable stand with a sample line extending from the manifold to the point of tapping into the mud stream.

A second sample line leads to the stand pipe or any other desired point in the mud ditch. It may be fitted with a funnel elevated four or five feet above the overflow outlet of the instrument to enable the operator to secure in a bucket a sample of mud from any point in the ditch or pump-relief connections, and to determine the gas content for comparison with the content found in the sample from the casing.

To make a determination, inlet and outlet petcocks to the chamber of the instrument are opened to permit mud to flow from the casing through the instrument until a representative sample is passing through the completely filled chamber and until the temperature of the mud and instrument are equalized. The inlet and outlet cocks are closed, a plunger handle turned until the gauge pressure reads the selected callibration pressure, and the reading taken directly from the callibration scale.

Pipe Vise

ARMSTRONG MANUFACTURING COMPANY

A pipe vise designed for portable or stationary use, designated Type 933 Vistand, has been announced by Armstrong Manufacturing Company, Bridgeport, Connecticut.

The unit has spreads of 50 inches in front, and 43 inches from front to rear leg to prevent tipping. The platform, which measures 14 inches in both width and depth, features tool notches and slots around the rim, an oil can recess,

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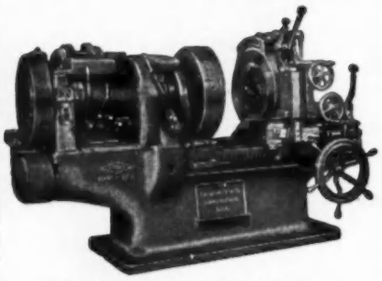

New Landis 4¾ Receding Chaser Pipe Threading Machine

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Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

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Fairfax 1466

OIL BOOKS

The knowledge gained through years of work and study by some of the most capable men in the oil industry is set down in the various oil books published and sold by the Gulf Publishing Company. Catalog of these books furnished upon request.

THE GULF PUBLISHING COMPANY
P. O. Box 2608 Houston, Texas

NOTES FOR THE Equipment Buyer and User

Armstrong Type 933 Vistand

and a dope pot. Equipment includes three benders, one for ¾-inch pipe, and reverse benders for ½- and ¾-inch pipe, all placed directly over the right front leg.

The stand has a ceiling brace. Feet are punched for attaching to the floor, or they may be equipped with skidless rubber shoes to prevent scratching a polished floor. The vise has a new screw with frictionless disk to protect the tip. A one-piece slide rides on the outside of the frame. Vise jaws are heat treated, with teeth spaced to hold each size of pipe. Each tooth is undercut to prevent it from filling up with scale.

Motors

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued Bulletin 3706 describing two large totally enclosed fan-cooled Type CS motors, frames 32 and larger. Application and features are explained, and a discussion given of air circulation, construction and operation. A cross-section view is shown to illustrate blower circulation.

Welding Equipment

Victor Equipment Company, 844 Folsom Street, San Francisco, has issued a 1941 edition of its catalog of welding and cutting equipment. It illustrates and gives specifications of various torches, regulators, cutting tips and accessories.

Oil Men From Abroad Are Guests of Houston Nomads

Four visiting oil men from South America and Cuba were guests of the Houston chapter of Nomads at the March meeting, held at the Brae Burn Country Club, March 10.

Visitors were W. I. Woodson, The Texas Company; R. B. D. Wrixon and J. O. Van den Berg, Shell Oil Company, and R. A. Bess, Cuban Oil Company. Short talks on the oil industry abroad were made by each visitor, and by B. E. Johnston and R. L. Dudley. Johnston returned from South America recently.

Carl Lee, Larry O'Donnell and Paul Gaurin, of Shell Oil Company, Houston; A. F. Brown, Los Angeles; Tad Putnam and Sam Galley, New York, and Ed Lorehn, R. N. Wright, Jim Fortune, John Sides and Wallace Davis, Houston, were other guests. Presiding was Frank Champion, chapter president.

C. F. Vincent, Byron Jackson Company, and Bob Horton, Link-Belt Company, were elected to membership.

Motor

U. S. ELECTRICAL MOTORS, INC.

A vertical explosion-proof motor, designed for applications in Class I, Group D and in Class II, Group G locations, as defined by the National Board of Fire Underwriters, has been announced by U. S. Electrical Motors, Inc., Los Angeles.

The unit is fan-cooled, and features asbestos-protected windings. It is offered with a variety of mounting flanges, and regardless of the design of the machine, a mounting bracket is available to fit without additional adaptors or plates.

U. S. Explosion Proof Motor

HOBBS PIPE LINE SPECIAL

Type PLS HOBBS

A double-bolster trailer for use with truck not equipped with platform body. Recommended especially for hauling long material. Telescoping tongue. Rigid double bolster, Self leveling action and Special Combination of the fifth wheel, truck bolster and tongue connection. Simplifies the handling of extra long pipe, poles, etc.

Write for complete details—See Pages 1052-1054 Your Composite Catalog

HOBBS MANUFACTURING COMPANY
FORT WORTH . . SAN ANTONIO . . HOUSTON . . LUBBOCK

NOTES FOR THE Equipment Buyer and User

Grove Regulator Company in New Plant at Oakland

Grove Regulator Company has moved into new modern offices and plant at 1190 67 Street, Oakland, California. The structure provides enlarged engineering, production and testing facilities.

The factory features a complete testing laboratory manned by staff of chemical and metallurgical engineers. A 10,000-pound hydraulic testing unit and an automatically controlled testing boiler capable of developing heat temperatures up to 1000° F. and 2000 pounds pressure, have been installed. Nearing completion is a heat treating furnace to insure closer supervision and greater uniformity of the company's high-pressure regulators.

A further addition which will increase the present floor area is contemplated.

Norvell, Pickering Organize American Well Servicing Company

The American Well Servicing & Drilling Company has been organized by Harvey Norvell and Ed E. Pickering with offices in the Sterling Building, Houston.

Norvell has received a B.A. degree from Rice Institute, and Pickering is a graduate of Rice Institute and for five years was engaged in sales work for Wilson Supply Company.

Paint

The United States Stoneware Company, Akron, Ohio, has issued Bulletin 1610 describing properties of Tygon, designed as a corrosion-resistant for process industries. The product is a modified Halide Polymer much like grape jelly in its original appearance and consistency. It may be formed into a patent leather-like material for application as a lining for process equipment; into a resilient compound for making flexible sheets, tubes and moulded goods, or into a liquid for spraying, dipping or painting surfaces subject to corrosive action. It is described as unaffected by practically all inorganic or organic acids, salt solution and alkalies with the exception of glacial acetic and fuming nitric.

Ejectors

Worthington Pump & Machinery Corporation, Harrison, New Jersey, has issued Bulletin W-205-B6B describing its Type NPA single-stage steam-jet ejectors. The bulletin describes engineering features, gives photographic and line-drawing illustrations, and tables showing capacities of different sizes. The ejectors employ stainless steel, bronze, monel metal, Ni-Resist, lead, Worthite, Antaciron, carbon or porcelain.

Insulating Material

Johns-Manville, 22 East 40 Street, New York, has issued Catalog GI-6A, a 1941 edition of its industrial products catalog. Its 52 illustrated pages give information and recommendations on high- and low-temperature insulations for industrial needs from 400° F. below zero to 2500° F. above zero. Data are included in refractory products and castables; specifications on bonded asbestos built-up roofs and insulated roofs; information on corrugated Transite for roofing and siding; on industrial friction materials; on pressure pipe, industrial vent pipe and stacks, and on packings and gaskets.

Shovels, Cranes

Link-Belt Speeder Corporation, 301 West Pershing Road, Chicago, has issued Catalog 1885, giving 16 pages describing its 2- to 3-yard Speed-o-Matic Series 500 shovels, draglines and cranes. It describes features of the equipment, including welded unit construction, interchangeable crawler side frames, and hydraulic power control. Seven pages are devoted to dimensions, clearance diagrams, working ranges, lifting capacities and brief specifications.

Equipment

Dresser Manufacturing Company, Bradford, Pennsylvania, has issued a 24-page booklet on "Gas, Oil and Water for Millions of Moderns," outlining history and products of the company and its subsidiaries, Dresser Manufacturing Company of Toronto, Canada; The Bryant Heater Company, Cleveland; Clark Bros. Company, Olean, New York, and Pacific Pump Works, Huntington Park, California.

Welded Fittings

Midwest Piping & Supply Company, 1450 South Second Street, St. Louis, has issued Bulletin WF-41, giving 40 pages descriptive of its line of welding fittings. It includes information on construction of the fitttings, and gives complete specifications and prices of various items.

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Elastic Stop SELF-LOCKING NUTS

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A Bit Better
Manufacturers put the works into drilling bits. Do you get the "works" out of them?
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That's why—for maximum bit life—you need the complete Martin-Decker "Sealtite" Drilling Control . . . sealed Weight Indicator, sealed Mud Gauge, plus rotary table Tachometer, Torque Gauge and Recorder . . . to accurately control your operations!

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Letters to the Editor

Federal Control

DEAR SIRS:

Believe it or not, I had read your editorial on Pages 12 and 13 of the March 10 issue of THE OIL WEEKLY and laid it aside to write you a note of appreciation, before I received and read my regular mail.

Coming, as it does, Monday morning, when one is inclined to take a fresh look at things, I usually glance at "The Changing Panorama" and any other apparently outstanding articles. Your editorial on the following page caught my eye. It is excellent, in my humble opinion, and I am encouraged in witnessing sound, wholesome, and fact-telling statements, such as this editorial.

We must realize that the oil industry cannot very gracefully or perhaps truthfully claim a larger proportion of able, keen, hard-working, fair, and humanitarian executives than other industries. As a matter of fact, in comparison with the textile industry and many others, the oil business, especially excluding production, was handicapped comparatively lightly when the nationwide depression struck us ten or eleven years ago. It is found that the American public, although it might become delinquent in its church pledges, its doctor bills, and even its payments for groceries, insisted on buying some gasoline to keep the family car running, and our volume transported, refined, and distributed, decreased very slightly compared with the volumes of heavy industries and many others.

This situation, of course, has been helpful, and it seems to me it is only the envy of those outside the industry that is prompting these uncalled for attacks, which if victorious will destroy the unprecedented efficiency in the difficult job of discovering oil, transporting the inflammable substance safely all over the country, and marketing its principal and most inflammable product, gasoline, with safety and convenience to the purchaser, who does not even leave his comfortable seat in his car for the purpose.

Our oil industry's economics are similar to our blessings of democracy. If we do not realize the importance of retaining them, we may lose them to our undying regret.

B. P. SIBOLE,
Vice President

Stanolind Pipe Line Company
Tulsa, Oklahoma.

DEAR SIRS:

The editorial on federal control could not have been written more ably, and while it advises the oil industry, still the nation as a whole, and particularly the twenty-five million of the electorate who voted to retain the present administration, are not aware of the peculiar conditions surrounding oil which would inevitably raise the price of automotive fuel.

The writer has helped before against federal control, believing that the states still have the right to police their internal affairs, and would be very glad to help again now.

HARRY PENNINGTON

Producer of Petroleum
San Antonio, Texas

Germany's Oil Supply

DEAR SIRS:

In your article on Germany's oil supply you estimate 220,850,000 barrels per year. Your figuring indicates 220,850 barrels per day. Isn't the latter figure correct?

W. E. WRATHER

Dallas, Texas

DEAR SIRS:

The second paragraph, center column, page 13, of your issue of February 24, 1941, dealing with Germany's oil supply, reads:

". . . would bring the figures up to 220,850,000 barrels per year . . ."

If my arithmetic is correct, this would credit Germany with a daily supply of 605,068 barrels.

Obviously this was intended to read:

". . . 220,850 barrels per day, or some 80,610,250 barrels per year . . ."

Only a minor error of 140,239,750 barrels in one year, which in this day of astronomical monetary figures should be disregarded in view of the interesting information compiled in this article.

ADRIAN MOORE

Houston, Texas

Trust these readers' eagle eyes to catch the error—because error there was. What the writer meant to write was that the total production of oil and synthetic oil in Germany and countries under German domination was 220,850 **barrels per day,** and not 220,850,000 barrels per year. The actual sum, as we added it several times, was 220,849 barrels, but we are sure they will forgive us fudging just one barrel to get a round figure. As to how the error occurred, there is no excuse to offer save that an error was made in the stenographic transcription, because the writer was endeavoring to reduce Germany's available production to barrels per day.

Position Open for Engineer-Writer

THE OIL WEEKLY has permanent positions open on its editorial staff for several technically trained writers. Applicants should be graduate engineers with practical oil field experience, an interest in writing, ability to use a camera and of pleasing personality. Married men are preferred.

All applications should be accompanied by personal photograph, biographical sketch of education and oil field experience, age and references to any published articles or papers that the applicant has prepared.

Address application to—

Editorial Department

THE OIL WEEKLY

P. O. Box 2608 • Houston, Texas

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